Index to Contents of This Issue

AIRPORTS AND AVIATION

Airports Up 22%, CAA Report Shows.... 15
Civil Aircraft in U. S. Now Number 81,002 15
How Many Runways Do You Actually Need? 15
Los Angeles Gets Helicopter Mail Service 15
Time for Airport Planning 83
New York Airport Administration 109

BEAUTIFICATION

Free Chrysanthemum Seeds For Use in Municipal Plantings 106

CELEBRATIONS

Returned Gravel Highlights North Tonawanda Jubilee 145

CEMETERIES

Klamath Falls Builds New Municipal Cemetery 114

CITY MANAGER PLAN

Woman City Manager in San Juan, P. R. 98
Recent City Manager Appointments 143

EDUCATION

Texas Building Officials, Fire Department Personnel Attend Joint Courses 7

FINANCE AND TAXATION

Stabilization of Municipal Expenditures.. 91
Local Government Debt Down 4.2% in 1946 117
Municipal Bond Market 143
Municipal Bond Offering Volume Zooms Upward 143
Pittsburgh Bond Issue Wins Decisive Approval 143

FORESTRY

Easier Tree Trimming 7

GOVERNMENT AND ADMINISTRATION

Municipal Information Service Helps Cities Solve Local Problems 107

HOUSING

Fortune Articles Urge Housing Industry Reorganization 88

LAWS AND LEGAL DECISIONS

Detroit Enacts Off-Street Parking Ordinance 98
Legal Notes and Decisions 141

LIGHTING, OUTDOOR

Poughkeepsie Provides Night Baseball .. 125
Street Lighting Visibility Evaluated 127
Lighting Costs in Capital Cities 129

NEWS AND ILLUSTRATIONS

Items from Manufacturers 151

NUISANCES

Increasing 2,4-D Effectiveness 106

OBITUARIES

F. H. La Guardia and Howard Myers.... 5

PARKS

Free Chrysanthemum Seeds For Use in Municipal Plantings 106

PLANNING AND ZONING

First and Last Words from Philadelphia 5
How Applicable is the Indianapolis Plan? 5
New Connecticut Planning Acts 5
New Jersey's First "Institute on the Community" 7
They Grow Long Villages in Idaho 7
Time for Airport Planning 83
Indianapolis Begins to Clear Slums 96
Public Reserve Area 102
Ohio Adopts Rural Zoning 103
Port Authority Idea Progresses in St. Louis 107
The Businessmen's Stake in Community Development 111

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Reviewing Patrick Geddes in India 112
Shreveport Stakes Out an Expressway ... 113
Zoning, Planning, and Urban Redevelopment in New Jersey's Proposed New Constitution 117
Zoning and Planning Notes 139

POWER PLANTS

Growth of Publicly Owned Electric Utilities 99
Corning Makes Healthy Small Plant Record 108

PUBLICATIONS

Reviewing Patrick Geddes in India 112

PUBLIC RELATIONS

The City Tells Its Story 86

PUBLIC SAFETY

Fire Chiefs' 74th Annual Convention 17
FM Radio for Iowa 17
Handling Racial Conflicts 17
Dangerous Police Assignments Handled with Minimum Risk 115

REFUSE

Elevator Refuse Collection 19
What Businesslike Administration Means 19
Winnipeg Builds a New Incinerator 119

SEWERAGE AND SEWAGE TREATMENT

Treatment Plant to Swimming Pool 11
State Stream Pollution Abatement Today 11
Sewage Sludge Fertilizer 94

STREET CLEANING AND REFUSE DISPOSAL

Thirty Percent in Cities 13
Elevator Refuse Collection 19
Kansas City Enlarges Street-Cleaning Service 19
What Businesslike Administration Means 19

STREET CONSTRUCTION AND MAINTENANCE

City Gets Small End of Gas Taxes 13
Training Course for Concrete Construction 13
Cleveland Design Standards 85
Residential Street Design 89
Dayton's Stewart Street Paving 90
Shreveport Stakes Out an Expressway... 113

SNOW REMOVAL

Barre Cuts Snow Cost in Half 99

TRAFFIC AND TRANSPORTATION

Shreveport Stakes Out an Expressway... 113
New Dearborn Control System..... 133
Which Big Cities Are Most Traffic Conscious? 135
Detroit's Drunk Drivers Go To Jail 137
Importance of City Transportation 137
Jail or Sticker 137
Trolley Coaches Preferred by Public 137

WATER SUPPLY AND PURIFICATION

Atlanta Extends Distribution System 9
Diesel Standby Insures Water Service ... 9
First Chartered Flight from AWWA Meeting 9
What Does Fluorine Treatment Cost? ... 9
How to Acidize Water Wells 92
Charlottesville, Va., Boosts Water Supply 104
Water Supply Wasn't the Problem 105
Two-story Ground-Water Supply 109
Should Water Mains be Cleaned and Not Lined? 110
San Diego Lines Its Mains 123

See pp. 21, 23, 24, 26, 28, 147, 149 for catalogs and publications on municipal and civic subjects.

List of coming conventions, page 145. **Index to Advertisements, page 186**

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One is for Everybody

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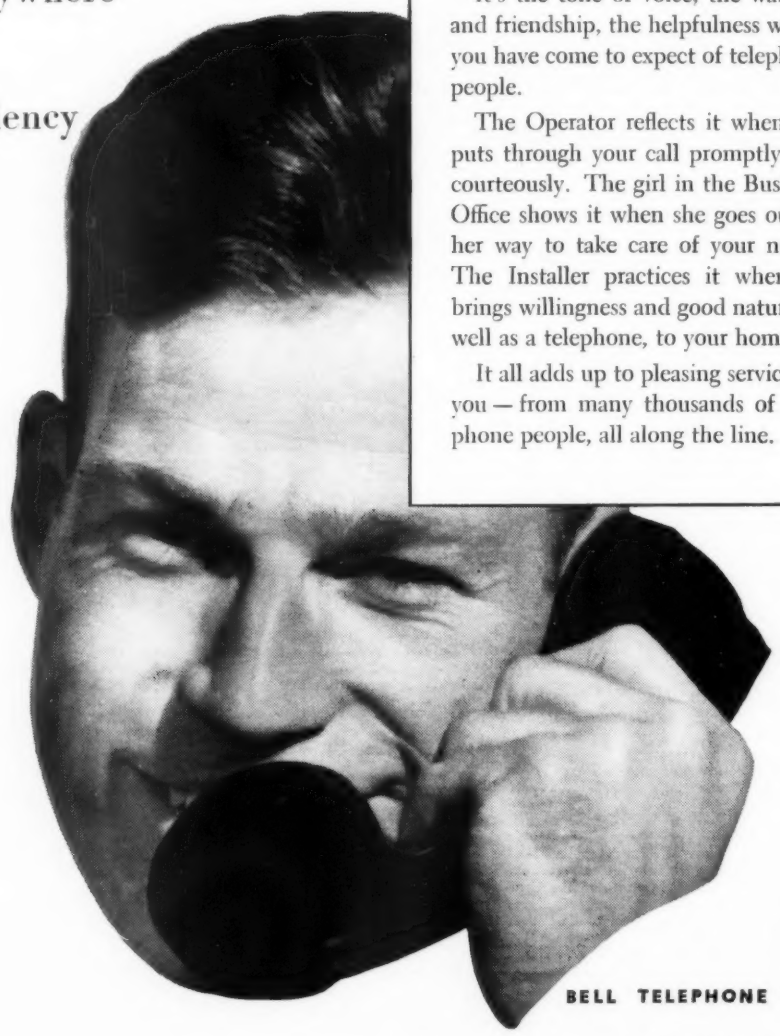


BELL TELEPHONE SYSTEM

Our Municipal Notebook

F. H. LaGUARDIA
1882-1947

With the passing of Fiorello H. La Guardia, former mayor of New York, and Howard Myers, editor and publisher of *The Architectural Forum*, last month the country lost two of its foremost leaders in the urban improvement cause.

"I love my city" was a phrase used by Mr. La Guardia to describe the reason for his devotion to the public service during his three terms as mayor of New York, and for his indefatigable efforts to make the city a better place in which to live. During his varied and successful career, Mr. La Guardia received national and international distinction. He served as Director General of the United Nations Relief and Rehabilitation Administration in 1946. But it is his dramatization and humanization of good local government—one of the greatest achievements of our time—for which he will be best remembered.

HOWARD MYERS
1894-1947

The outstanding work of Mr. Howard Myers as a proponent of good architectural design and as a staunch, public-spirited supporter of housing also deserves recognition. Although leading a busy life as editor and publisher, Mr. Myers found time to serve as director of such organizations as the Citizens' Housing Council of New York, the National Public Housing Conference, and as chairman of the architectural advisory committee of the Federal Public Housing Authority.

New Connecticut Planning Acts

THREE new enabling acts passed by the 1947 Connecticut General Assembly will make possible more realistic and active community development and strengthen the home rule of the state's municipalities. The three acts provide for municipal planning, regional planning, and municipal zoning.

According to information furnished by James S. Klar, Planning Engineer, Connecticuit Development Commission, the new legislation, approved by the Governor, grew out of recommendations which originated during a state-wide planning and zoning clinic held at Hartford in November 1946.

The new *Municipal Planning Act* enables any municipality, town, city, or borough, to create a planning commission. The law specifies that the plan of development for local bodies "shall be based on studies of physical, social, economic, and governmental conditions and trends and shall be designed to promote with the greatest efficiency and economy the coordinated development of the municipality and the general welfare and prosperity of its people." The concurrence of the planning commission is required before action may be taken on municipal capital improvements, and provisions for subdivision control are incorporated in the act.

The *Regional Planning Act* permits contiguous towns with planning commissions to join in the creation of regional planning commissions.

The new *Zoning Enabling Act* clarifies inconsistencies and inadequacies in previous Connecticut zoning legislation, and makes provisions for the integration of planning and zoning programs, the election of zoning boards of appeals, and a sharper definition of their powers, duties, and rules of conduct.

First and Last Words From Philadelphia

IN 1911 Philadelphia was host to the third annual meeting of the National Conference on City Planning. Among the outstanding planners present were the late Thomas Adams, George B. Ford, Lawrence Veiller, Raymond Unwin, Nelson P. Lewis, John Nolen, Charles Mulford Robinson, and several still living, including Lawson Purdy, Frederick Law Olmsted, Frank B. Williams, and Charles E. Merriam.

A feature of these conferences was what is believed to have been the first city planning exhibition held in America. It was on display in the City Hall under the auspices of a committee of which W. Templeton Johnson, now of San Diego, was a leading staff member. The exhibits consisted of photographs of existing conditions and plans and sketches of proposed improvements from municipalities of various sizes in the United States, Canada, and Europe.

Last month witnessed the opening of another exhibition in Philadelphia—not the first word, but to date the last word in imaginative, dramatic displays of city planning ideas and ideals. "The City Tells Its Story" department of this issue (pages 86, 87, 88) describes and illustrates some features of this remarkable exhibition. It is worth reading about—but much more worth seeing. The show will be on at Gimbel's Store—the exhibits occupying more than an acre of floor space—until October 15. After that, efforts will be made to place the exhibit on permanent display elsewhere in the city.

How Applicable Is The Indianapolis Plan?

THE Indianapolis urban redevelopment program, described in this issue, has been widely talked about as the answer for the slum clearance and rehabilitation needs of our nation's cities. Some of the unique features of the Indianapolis program and current project deserve consideration, however, before it is touted as a simple cure-all for other municipalities.

In the first place, the entire plan depends upon a comprehensive piece of state legislation, known as the "Redevelopment Act of 1945." This act contains declarations of public policy, definitions, and procedures for the determination of blighted areas that have greatly aided and expedited the work of the Redevelopment Commission.

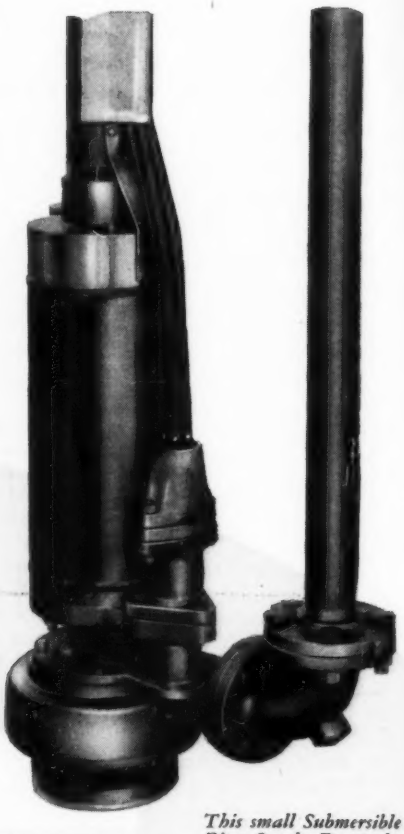
It is also made clear in the Indianapolis plan that "slum clearance is not necessarily the same thing as new low-rent housing." Few will quarrel with this premise. The fact remains that the families displaced from the cleared slum areas must be adequately rehoused, a point on which the Redevelopment Act is weak. If the displaced families are not provided with decent dwellings elsewhere at low rentals, they will only be forced to move to other substandard areas of the city, and thus aid in the creation of new slums. It would seem that a program such as that now under way in Indianapolis might, if these facts are not recognized, only defeat its own purposes in the long run.

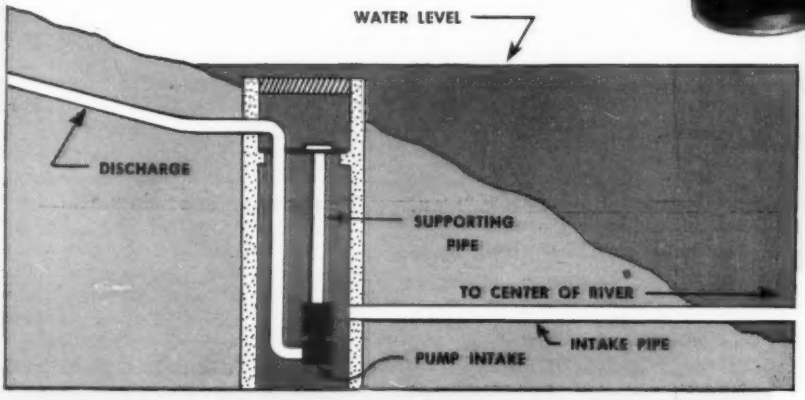
Still another feature of the first Indianapolis project deserves attention. It will be in an area with a relatively low population density and few multi-story buildings. The costs for acquiring the land there will be low in compari-

Pumping from lake or river?
. . . with icing in winter?
and high water in the spring?

get *Under* the trouble with a **BJ**

SUBMERSIBLE RIVER INTAKE PUMP





This small Submersible River Intake Pump delivers river water at 100 gpm against a 55 ft. head. Consistent water delivery in spite of 40° below zero North Dakota Winter temperatures and Spring high water 45 feet above the pump intake.

CAPACITIES: to 5000 gpm
MOTOR SIZES: 7½ to 350 hp
INSTALLATION: Vertical, Horizontal, or on an incline

Down at the bottom of the river or lake it doesn't matter about ice or high water. That's why the Submersible is the logical solution to this kind of pumping problem. It operates regardless of surface conditions.

Sealed oil-filled submerged motor is close-coupled direct to pump (pump can be any one of several different types).

Starting panel (equipped for manual or automatic starting) can be located at any convenient point above flood stage. Discharge pipe should be buried enough to eliminate freezing.

Many other advantages. Easy to install. Simplified intake structure. No adjustments. No pump house. Operates for months without attention. Safe against vandalism.

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son to what would have to be paid for land in most central city slum areas. The total appraisal value of the area was found to be $875,000, compared to an assessed value of $504,000.

Indianapolis officials are to be commended for their hard work in getting beyond the "talk stage" of urban redevelopment and swinging into action. The independence of the Hoosier city in going ahead without outside assistance or financial aid should be admired. It would seem evident, however, that the Indianapolis redevelopment plan cannot, by itself, be considered as a pat solution to be easily applied by other cities in solving their slum and blighted-area problems.

Easier Tree Trimming

IT'S a pretty shabby town that doesn't wish to be proud of its trees. Often the thinner and straggler they are, due to geography and climate, the more care is given them. And it's especially in the hundreds of old towns and cities that many of the trees, more venerable than the oldest inhabitant, need more felling, trimming, and replanting than sometimes is given them.

The work requires skill and brawn. Taking down a fair-sized tree, to say nothing of an old-timer, and sawing it up by hand, can take half a day or more, tire several men, and cut into the time and budget of the local shade tree commission. That alone accounts for the discovery by municipal officials of the portable power-chain saw. These gasoline-driven saws are built in several sizes from light models, suitable for operating from a tower truck, to heavier models which quickly fell trees and cut them up in the street with minimum interruption to traffic. The need for them was shown by the two hurricanes that hit the East in the last ten years, and the high winds more common to other regions. This need was also dramatized by the publicity given to the pioneer municipal employment of the chain saw in East Orange, N. J. There it saved money, drudgery, and fatigue, tripled the number of trees receiving attention, and made money for the city by sawing into hearth sizes the discarded trees and limbs.

The trees that line the more than 200,000 miles of town and city streets furnish only one municipal application for chain saws. There are many others. Fire departments find frequent use for them where obstructions are formed by timbers and fallen columns. They are police indicated for rescue trucks. In addition to the Park Department, the Water Department frequently owns large woodlands requiring trimming and cutting.

Texas Building Officials, Fire Department Personnel Attend Joint Courses

JOINT sessions with fire department personnel and officials highlighted the First Annual Five-Day School for Texas Building Inspectors which was held in conjunction with the 18th Annual School for Firemen at the Agriculture and Mechanical College, College Station, Texas, in July. The courses offered were designed to be of special benefit to building officials of small municipalities, and to give them an opportunity to meet and discuss common problems with other building officials of the southwest.

The need for cooperation and friendly relations between building and fire officials was stressed at every opportunity during the joint meetings. It was pointed out that in recent hotel fire disasters the fire-fighting services had little or no chance because of fire-precaution deficiencies in the construction of the buildings.

Mr. John Fies, who has recently opened his own office in Dallas as municipal consultant on building code matters and zoning ordinances, served as general chairman for the building inspectors' course.

As the school closed, a Texas Building Inspectors Association was formed, with Mr. Lee G. Larson, Building Commissioner of Fort Worth, elected President, and Mr. R. C. Cummings, Deputy Chief Building Inspector, Dallas, elected Secretary.

They Grow Longer Villages in Idaho

MORE than seventeen new incorporated villages have been formed, many of which are merely wide places on the highways, as an unforeseen result of laws passed by the Idaho legislature at the 1947 session. The new legislation authorizes the sale of liquor by the drink and the operation of slot machines in cities and incorporated villages only, and prohibits the sale and operation thereof outside of such cities and villages.

Among the new incorporated villages are Sun Valley, the resort area, and Island Park and Warm River, situated just west of Yellowstone Park. Island Park will extend a distance of more than twenty-five miles and, observers believe, may be the longest "village" in the country. The village boundaries follow along a highway, digressing at only a few points to follow section lines and to avoid inclusion of property whose owners had declined to sign petitions for incorporation. Idaho law requires a minimum of 125 inhabitants to incorporate an area as a village with the rights, powers, and immunities of village government, and specifies only that the inhabitants thereof who desire incorporation must be taxable.

Mr. George C. Huebener, secretary-treasurer of the Idaho Municipal League, reports that it is now proposed to make one entire county into an incorporated village. This is Owyhee County, in southwestern Idaho, which contains about 7,000 square miles (almost the size of Massachusetts) but has only about 4,000 inhabitants. The present population is mainly engaged in farming, raising livestock, and some mining.

"It can easily be conceived," Mr. Huebener writes, "that the night marshal of such a large 'village' would have a difficult time in patroling it and would be a very lonesome policeman.

New Jersey's First "Institute on the Community"

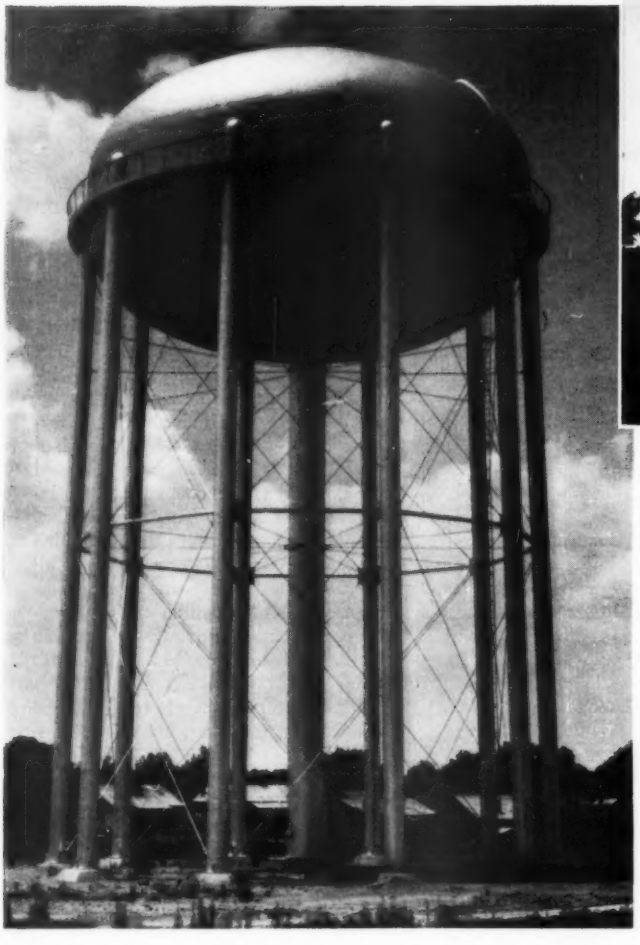
THE contagion of a good example as set by the New York State Citizens' Council in its annual Institutes on Community Leadership has spread to New Jersey.

On September 11-14 there was held at the Stevens Engineering camp, Johnsonburg, Warren County, what is expected to be the first of a series of annual Institutes on the Community. This Institute, under the auspices of the New Jersey Citizens' Conference, brought together for part or all of three days about 250 local leaders and prospective leaders in community activities in the state.

Among the subjects discussed in a series of practical and stimulating round tables were planning, intergroup relations, family and youth, constitutional revision, economic problems, education, international relations, recreation and arts, health and welfare, municipal government, and adult education.

Jerseyites or others interested may secure a summary of the proceedings from the Secretary of the Conference, Mrs. Frederick A. Kuser, Box 854, Trenton, N. J.

500,000 gallon "Twins" provide a MILLION GALLONS IN ELEVATED STORAGE at Anderson, South Carolina



The two Horton elevated tanks shown above hold 500,000 gals. each and have a range in head of 25 ft. The one in the upper right view is 103 ft. 1½ in. to bottom and the one directly above is 78 ft. 1½ in. to bottom. They are located in the water works system at Anderson, S. C., which is operated by the Duke Power Company.

THE two 500,000-gal. Horton elevated tanks shown in the accompanying illustrations were installed recently to provide gravity water pressure in the water distribution system at Anderson, S. C.

It is often more practical to install two or more elevated tanks, at different locations in the system, instead of one large tank of the same total capacity. This is particularly true when (1) there are several areas of heavy demand some distance apart, (2) the transmission mains in the system are not large enough to supply peak demands, or (3) the system is divided into separate districts which are operated independently of each other.

An adequate supply of water in one or more elevated tanks means *better* water service for a community. In addition to improving pressure, it provides uninterrupted service in case of temporary power failure and a reserve immediately available for fire protection.

Water works engineers and city officials are invited to write our nearest office for quotations on Horton elevated tanks—when planning *better* water service for their cities.

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Water Supply and Treatment

What Does Fluorine Treatment Cost?

THE people of Connecticut, like everyone else, have been asking this question because of fluorine's almost miraculous quality of being able to inhibit tooth decay, particularly in children. They have been intrigued by the long-term investigations now under way at Newburgh, N. Y., Grand Rapids, Mich., Marshall, Texas, and other cities where fluorine is being added artificially to the water in amounts not exceeding 1.0 ppm, supposedly the safe figure at which protection from dental cavities may be expected and still not obtain the staining and mottling of teeth that stronger concentrations of fluorine may produce.

Since the people of Connecticut were interested and wanted to know what the treatment would cost, Warren J. Scott, chief engineer of the State Department of Health, prepared an estimate to find out.

He discovered that fluorination of a small pumped supply might be provided for $1,000 or less. If the existing pumping station were not large enough to house the equipment, the cost of a small building would be required, running the cost up another $2,500.

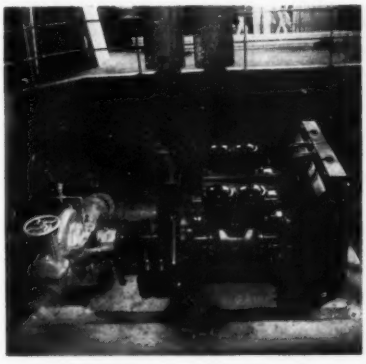
He discovered also that to install this treatment on an existing small gravity-chlorinated supply with a small flow-meter might cost approximately $4,000, if it were assumed that a small building had to be constructed to house the equipment. Similarly, treatment on an existing small gravity-chlorinated supply with a Venturi meter might cost approximately $5,000, if a small building had to be provided.

Where the installation would be made on a large gravity-chlorinated supply with a Venturi meter, the cost can run to $15,000 because of the need for a larger building for the equipment.

On an existing filter plant where no housing would be needed, the cost might run to approximately $1,000.

The operating cost, based on a per capita use of water of 100 gallons per day and a fluorine treatment of one part per million, would average ten cents per person per year.

These costs, of course, are only general and would vary with local conditions. The cost of equipment would be multiplied proportionately if there were more than one supply for the water system.



Above: The diesel insurance policy against excess water demand in the Streator, Ill., area. Below: Manager Janzen discusses the installation with a staff member at the main pumping station.

Diesel Standby for Service

BETTER water service for Streator, Ill., results from an improvement by the Northern Illinois Water Corp., serving Streator and a number of surrounding unincorporated areas. The improvement consists of reconverting and modernizing the main pumping station. Formerly powered by steam turbines, the new main pump will now be operated by electricity. Supplementing this installation is a General Motors 200-hp twin-diesel engine which has been installed for emergency stand-by use. This diesel-power unit is direct-connected to a dual-valve centrifugal reserve pump having a capacity of 4,000,000 gallons per day, approximately the peak load of the station.

H. B. Janzen, manager, expects to operate the two systems simultaneously during overload periods and times of emergency when electric power is not affected.

First Chartered Flight From an AWWA Meeting

THE New York section meeting of the American Water Works Assn., held in Plattsburg, N. Y., in September had one unique sidelight. Insofar as can be determined, this marked the first time that a chartered plane was used to transport a group to or from the meeting.

A group of eight arranged with Colonial Airlines for a special flight from Plattsburg to New York City. The group included Alan Hopper, Turbine Equipment Co.; Leo Desmond, Eastern Sales Manager, Central Foundry Co.; Tom Robinson, Pittsburgh Pipe Cleaning Co., New York; James Losee, Town Engineer, Tarrytown, N. Y.; William Thrasher, Superintendent of Westchester County Joint Water Commission; Bert Seeholzer, Water Works Supplies, New York; C. H. Hammel, Commissioner of Water, Manhasset-Lakeville Water District, Great Neck, N. Y.; and W. S. Foster, Engineering Editor of THE AMERICAN CITY. The Colonial Airline hostess for the flight was Miss Norma S. Gaskill.

Atlanta Extends Distribution System

PROBABLY the biggest single extension of the waterworks system is in progress in Atlanta, Ga., today. The city is now preparing to lay some 17,700 feet of 16-inch pipe, 22,000 feet of 12-inch pipe, and 25,500 feet of a combination 24-inch and 20-inch line. All are being installed by city employes.

The 16-inch and 12-inch lines are being extended to serve a rapidly growing section in which a large number of houses already have been constructed or are now under construction. The 24-inch and 20-inch combination main is designed not only to provide a water supply for the houses already built, or those being built in the Atlanta territory, but will be extended into a neighboring municipality, and will take care of a large industrial development now under construction in which some 3,000 to 5,000 persons will be employed.

This, says W. Z. Smith, General Manager of the Water Works Department, is taking care of an expanding Atlanta that is literally bursting at the seams.

"In all my experience of more than fifty years with the city of Atlanta," he states, "I have never known such growth in this community. We confidentially believe the population will reach a figure of 800,000 before the year 1960."

The Department Store Idea

When you think of a Ryerson Plant, picture a huge department store featuring all kinds and shapes of steel. In place of the ordinary sales personnel, think of a large staff of experienced steel men—a sales department that's been carefully trained to guide your steel purchasing—to see that you get the exact steel you need for the job at hand.

And, when you think of Ryerson Steel-Service, think of a smooth-flowing system of steel supply that eliminates every unnecessary delay between order desk and point of delivery. Think of the most modern steel storing, cutting and shipping methods —methods based on more than a century of performance. And remember that Ryerson Steel-Service functions with the same efficiency and promptness whether your order calls for pounds or tons.

Naturally, today's great demand for steel frequently unbalances our stocks. But if the steel you need is not immediately available, we'll gladly do everything possible to supply you with a practical alternate.

What does it all add up to? Well, just about the last word in steel-buying convenience. And it's all yours when you contact a Ryerson Plant for any steel requirement.

•

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RYERSON STEEL

Sewerage and Sewage Treatment

State Stream Pollution Abatement Today

A SURVEY of state curbs on water pollution by the *Bond Buyer* in the August 16 issue gives an indication of how this problem is faced today.

Rhode Island's Legislature enacted a series of five pollution-abatement laws. The main measure provided for a special election on the issuance of $5,000,000 in bonds for the construction of a sewer-district facility to collect and to treat sewage from the cities of Pawtucket and Central Falls, and such parts of the towns of East Providence, Cumberland, and Lincoln as are designated by a five-member state administrative commission. The measure made the project self-liquidating by providing for assessments on communities and private corporations for this service.

Other bills in the Rhode Island series authorized cities and towns to levy sewer-use taxes bearing a reasonable relation to the cost of service rendered; abolished exemption of Newport, Jamestown, and New Shoreham from application of a 1920 pollution act; provided for prompt prosecution of those responsible for polluting the waters of the state with petroleum or its products; authorized Rhode Island participation in interstate abatement compacts.

Vermont moved toward pollution abatement through the enactment of legislation enabling municipalities to organize sewage disposal districts, issue bonds for the construction of sewage disposal facilities, and amortize the bonds through imposition of sewer service charges.

A special interim legislative committee in California was provided with a $100,000 appropriation to investigate water pollution problems.

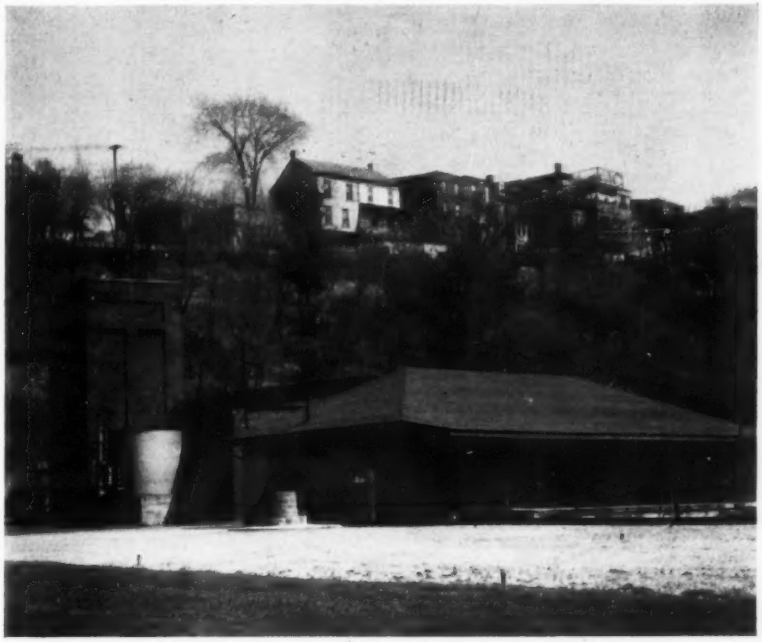
Recently the Interstate Sanitation Commission, which was activated in 1935 under a New York-New Jersey-Connecticut pact, has prompted Mayor O'Dwyer's New York City administration to consider a special sewage-disposal tax to finance an extensive system of intercepting sewage treatment plants. Only about 40% of New York City's sewage is treated before being dumped into its rivers and harbors at a rate of a billion gallons a day. The city's seven existing modern plants will have to be supplemented by another 10, at a cost of perhaps $200,000,000 before the untreated effluent is taken care of.

Although the Commission threatened no court proceedings against New York City, action was recently instituted in the New Jersey courts to halt raw sewage dumping in the Hudson River by Union City, West New York, and Weehawken.

In spite of significant progress reported at a recent meeting of the Interstate Commission on the Delaware River Basin, it was noted that communities along the Delaware River are meeting acute financial problems in their efforts to begin operations under a proposed $100,000,000 four-state pollution abatement program. New York, New Jersey, Pennsylvania, and Maryland have delegated to the Commission the duty of devising practical programs for the judicious development, use, and conservation of the basin's natural resources.

In one of the reports presented at the meeting of the Delaware River Basin Commission, which was created in 1936, it was disclosed that more than 1,000 pollution-abatement orders have been issued by authorities in Pennsylvania and New Jersey to industrial firms and municipalities in those states discharging inadequately treated industrial wastes and city sewage into the river.

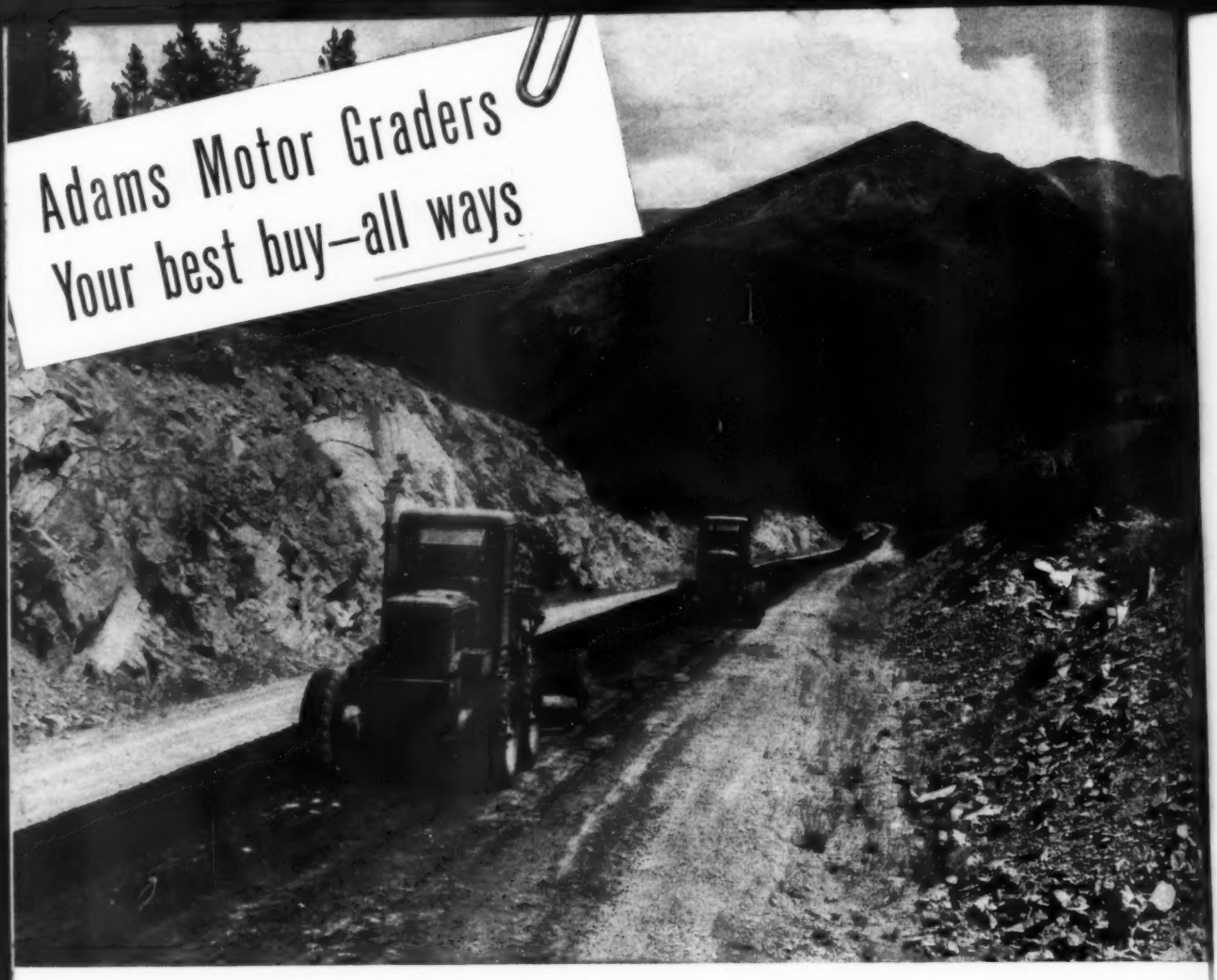
Treatment Plant to Swimming Pool



Allentown's converted swimming pool. The tank in the left background, originally the lime solution tank, is the filter for the swimming pool water.

PROBABLY America's only example of a sewage treatment plant that has been promoted to a swimming pool is located at Allentown, Pa. Back in 1921, the city built a plant capable of treating 1.5 mgd in accordance with a proprietary treatment method using chemicals and electrolytic action. The plant never was too successful and apparently provided treatment through the coagulating action of the chemicals rather than the bactericidal action of the electricity. Ultimately it was abandoned in favor of the present Imhoff tank plant with its trickling filters, that has given yeoman service for the past twenty years.

When the old plant went out of service, Water Superintendent W. R. Schnabel and City Chemist Harry Krum decided that those empty tanks needn't go to waste when they were in a part of town that was not too well supplied with recreational facilities. They cleaned the tanks out carefully, erected a bath house, installed filter equipment, and wound up with a useful and popular, if not too decorative, pool.



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This means *more efficient work—more work per day—more profitable operation.* And Adams' high transport speeds (up to 21 m.p.h.) importantly reduce costly, non-productive travel time to jobs and between jobs.

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Street Construction & Maintenance

Thirty Percent in Cities

AT LEAST 30% of all road-building expenditures during the next five years will be spent for construction of new city and suburban streets, Claude C. Blair, President of the Paving Brick Institute, stated.

The volume of municipal paving declined sharply during the war, when residential construction was restricted largely to war housing, and in 1943 fell to the lowest point in 30 years, amounting to less than $60,000,000 for the entire country.

Large-scale home building, however, requires a great acceleration in the building of new streets. By 1948, expenditures for municipal paving should exceed the record of $485,000,000 set in 1927, when home building reached its all-time peak.

Most local communities will have ample funds to improve their street systems and from now on should encounter no difficulty in obtaining the materials and labor required either for new construction or for improving existing streets.

Cities Get Small End of Gas Taxes

ACCORDING to a survey by the Public Roads Administration, more than half the gasoline taxes collected in the United States was paid by operators of vehicles that never leave the city streets. These include intra-city buses, and various delivery and commercial vehicles.

The Federation of Tax Administrators records a tax collection during 1945 of approximately $773,000,000. Last January alone brought in a net of $81,000,000.

All the payments by all states for construction, maintenance, administration, or other expenses for local city streets in 1945 amounted to $45,893,000. Of this, $5,624,000 amounted to direct payments by the states, and $40,269,000 represented transfers to cities. The transfers were made by twenty-four states and the District of Columbia.

Thus, although travel on city streets accounted for the means of raising more than half the gasoline tax funds, less than 7% of this revenue goes to the city for the purpose of maintaining these same streets.

Training Course for Concrete Construction

ESTABLISHMENT of a training course in the fundamentals of concrete making and concrete construction practices, for technical personnel of both the Portland Cement Association and its member companies, has just been announced by Frank T. Sheets, President of the Association.

John A. Ruhling, veteran concrete man who has been manager of the Association's Housing and Cement Products Bureau since 1944, has been appointed manager of technical personnel training. Carl A. Menzel, research engineer with the Association since 1928, has been appointed to succeed Ruhling as manager of the Housing and Cement Products Bureau.

The training course, to be conducted in 13-week periods, has a duel purpose, according to President Sheets.

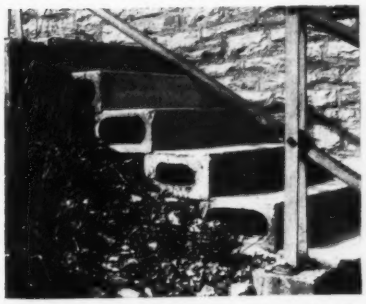
"Not only will this intensive training in modern construction practices enable new men on our staff to serve the public more effectively," Mr. Sheets said, "but it will enable them to develop into positions of greater responsibility more rapidly.

"The Association is one of the oldest and strongest in the construction field. For more than 30 years its field engineers have been rendering helpful service to users of concrete. The new training course is part of a greatly expanded research, development, and educational program recently announced by the Association. The objective is to continually improve the quality of construction using portland cement and to effect economies in time and in the use of materials."

Both Mr. Ruhling and Mr. Menzel, who will conduct the training course, have had many years of practical construction experience. Mr. Ruhling has held, among other important positions, an assignment with the Bridge Division of the Chicago Board of Public Works. Mr. Menzel's most recent work has been in the development of apparatus and field methods for determining air content of freshly mixed portland cement concrete.

Cincinnati has its share of hills and, to help its pedestrians, builds precast steps and stores them until there is need for them. J. R. Benight, Supervisor of the Highway Street Section, examines some of them.

Cincinnati's Precast Steps



The steps are laid on a prepared subgrade carefully tamped to minimize settling. If settling does occur, it is not difficult to correct it. Note the notch in the back corner of each step to hold the block above in place.

Not bad to walk down, says the young lady, but as difficult as any others to walk up. The work is directed by R. G. Sarvis, Director of Public Works, and C. E. Brokaw, Superintendent of the Highway Maintenance Division.

FOR QUICKER CONTROL

FLEXIBLE BWH FIREHOSE

BWH "BOSTON FIRE JACKET" HOSE
Double Jacket

Circular woven jacket of high tensile yarns for maximum wear and pressure resistance. Our highest quality municipal fire hose.

BWH "PARAMOUNT" HOSE
Double Jacket

Built to withstand high pressure. Dependably rugged, yet easy to handle. Exceptionally fine value.

BWH "MILO" HOSE
Single Jacket

Municipal fire hose with good weight jacket and substantial tube. Excellent quality for light pressure.

BWH "UNDERWRITERS" HOSE
Single or Double Jacket

Made in strict accordance with the National Board of Fire Underwriter's specifications. Labeled or unlabeled.

What starts as a small blaze often becomes a 3-alarmer if hose doesn't get into action fast. And that's why easy-to-handle **BWH** Fire Hose is preferred by many big city fire departments.

The huskiness of **BWH** Hose is also a valuable attribute. A long-aging rubber tube is combined with a strong circular-woven jacket in a design originated by **BWH** engineers 69 years ago—acknowledged by experts to be the most efficient type of hose to "stand the gaff" under severe conditions.

Municipalities will now find **BWH** Fire Hose available through the General Detroit Corporation and its subsidiary, the General Pacific Corporation, with branches and warehouses in almost every section of the United States. Call your nearby "General" representative next time your city needs fire hose . . . look for the "General" trade mark in the classified section of your phone book.

NOW! *Distributors of famous*

BOSTON WOVEN HOSE AND RUBBER CO.

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Airports and Aviation

Los Angeles Gets Helicopter Mail Service

FOR the first time in commercial aviation history the Civil Aeronautics Board issued a certificate of public convenience and necessity, authorizing air transportation of property and mail by helicopter.

The Board authorized Los Angeles Airways, Inc., to operate helicopters under a temporary certificate of public convenience and necessity for a period of three years over three circular routes, totaling approximately 200 miles, radiating out of the Los Angeles municipal airport to 30 post offices in the Los Angeles area.

In limiting the Los Angeles Airway's certificate to a period of 3 years, the Board declared that the potentiality in commercial transport of the helicopter is unknown and whether the service proposed can be maintained on an economically sound basis with substantial public benefit is a matter which can be established only by experience.

The Sikorsky helicopter pioneers in a unique mail delivery service..

Civil Aircraft in U. S. Now Number 81,002

TOTAL registered civil aircraft in the United States and Territories now number more than 81,000, the highest in our history, according to the Civil Aeronautics Administrator.

Broken down by states, the compilation of our civil aircraft as of January 1, 1947, shows California leading the list with a total of 8,456 and Texas close behind with 7,789. Vermont with 144 civil aircraft has the smallest number, followed by Rhode Island with 181. Aircraft in the territories belonging to the United States number 654.

Airports Up 22%, CAA Report Shows

THE number of airports in the United States increased 22% in the fiscal year that ended July 1, and the total of registered aircraft rose from 57,488 to 93,920. The production rate for civil aircraft is down from last year, and scheduled air-carrier passengers at Washington National Airport also have dropped.

These are the highlights of a monthly statistical report to T. P. Wright, Administrator of Civil Aeronautics.

How Many Runways Do You Actually Need?

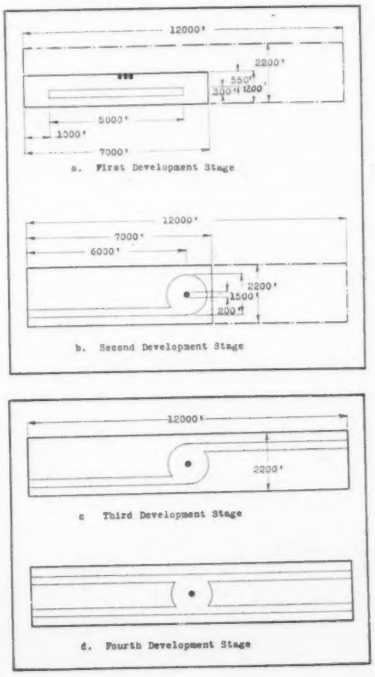
ONLY one runway is required for almost all flying needs, says Edward Payson Hall, airport design and planning consultant, Ferguson, Mo. At most, a runway system concentrating on one direction should be adequate.

In a pamphlet issued by Mr. Hall, entitled *Rational Airport Planning*, he points to an example of a typical midwestern city with a wind rose as diversified as any to be found throughout the country. This city, with a single runway properly directed and of adequate length, could almost always receive planes safely, since crosswinds rarely occur in excess of 30 miles per hour.

In the airport development as recommended by Mr. Hall, the first stage calls for a runway 5,000 feet long and 300 feet wide. The next stage is that of extending the runway to 6,000 feet, and building terminal facilities as required. Then, when traffic volume justifies further expansion, the third development stage provides for the addition of a second runway of 6,000 feet parallel to the existing runway and tangent to its circular apron. Should the community become the terminus for international operations, the two existing runways could be increased to 12,000 feet, which would accommodate the largest long-range aircraft forseeable.

The use of a "unidirectional" runway airport, Mr. Hall emphasizes, offers a practical solution to many of the most serious operating problems that are retarding the rapid expansion of the air transport industry. It is less expensive to construct, can be located closer to population centers, and is more efficient to operate.

The Civil Aeronautics Authority has gone on record as approving the unidirectional runway airport for Federal Aid. Approval was ostensibly based on the development of the castering landing gear for the larger aircraft.



VIGILARM INSULATED TUBING

THE FIRE DETECTING ELEMENT

PROTECT CITY BUILDINGS
Against Fire

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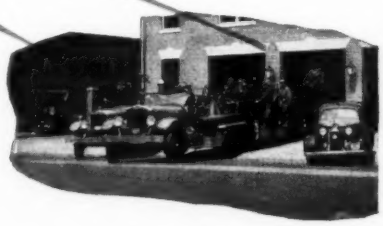
VIGILARM SYSTEM

AUTOMATICALLY DISCOVERS FIRE AND CALLS FIRE DEPARTMENT
Deriving Maximum Utility from existing Fire Defenses.

The Vigilarm System is of the Rate-of-Rise Type, operates in a matter of seconds following any sustained rise in temperature irrespective of prevailing room temperature, and hence, far faster than thermostats of fixed temperature types . . . It is of the Continuous Line Type and *protects every square foot of interior building area 24 Hours Daily.*



Plans and Estimates on this form of Relatively Inexpensive Protection Freely Supplied.
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Public Safety

Handling Racial Conflicts

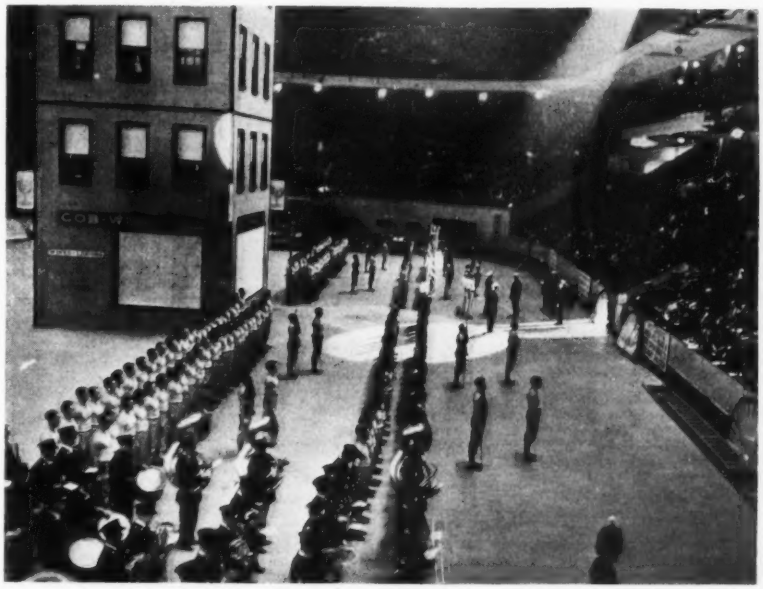
TRAINING programs to help police deal intelligently with racial conflicts are being stimulated in major cities because of sharp increases in the Negro population, says the International City Manager's Association. In Chicago, where the Chicago Park District has one of the most comprehensive police-training programs for racial amity, 53% of the population is foreign-born or the children of immigrants. Added to this are 344,000 Negroes. The Chicago Park District's training of police to handle group conflicts is given a series of six three-hour study sessions. In the first session, racial conflict is presented first as a world-wide problem, and then the focus is narrowed progressively to the United States, to Chicago, and finally to problem neighborhoods in the city.

The three kinds of situations in which group tensions are most likely to arise are: (1) discrimination in employment, (2) substandard housing and segregation, and (3) discrimination in recreation and social activities. One session shows the police officer's role in treating tension situations—mob behavior, the relation of crowd excitement to control measures, and the methods of dealing with rumors which incite conflict. Emphasis is placed on minimizing the possibility of outbreaks by use of preventive action designed to solve group problems rather than merely stifle them temporarily.

FM Radio for Iowa

INSTALLATION of the first station in an emergency radio system, which will cover the state of Iowa with a 70,000-square-mile state-highway-patrol FM network, has been reported by the General Electric Company, Syracuse, N. Y.

According to Charles E. Nord, chief radio engineer of the system, "It is expected that FM will eliminate the static and interference prevalent on AM, especially during the summer months. Many times we receive interference from stations in California and Alabama on our present low-frequency AM receivers, which hampers our law-enforcement activities." The towers for the Maquoketa station are located on the highest accessible point in the area which is 320 feet high.



COURTESY RAPPAPORT STUDIOS

"On stage" of "The Midnight Alarm" produced by members of the New York City Fire Department. Cobweb Hall is set afire and saved during the show.

Fire Chief's 74th Annual Convention

AT the annual conference of the International Association of Fire Chiefs, held in New York City August 19 to 22, Matthew M. Braidech, Director of Research of the National Board of Fire Underwriters, announced that attempts will be made to safeguard the future handling of ammonium nitrate, which is needed in large quantities as a commercial fertilizer. The vast losses of life and property during the Texas City disaster last April were reviewed in detail.

In discussing the severe hotel fires of last year, John J. McCarthy, fire prevention consultant to the New York State Hotel Association, recommended a new program of engineering, education, and enforcement to eliminate the future possibility of disastrous hotel fires. He declared that hotel employes should be drilled by fire department officials in a program of prevention, and that fire codes be enforced as strictly as those governing safety in industry.

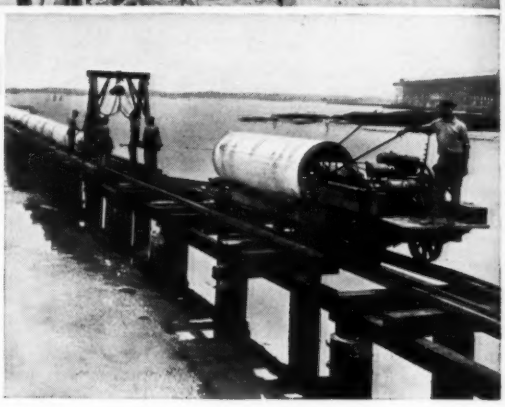
Chief Harold J. Burke of the New York City Fire Department presented a detailed report on the types and uses of various gas masks. His report was based upon a survey compiled from questionnaires submitted to members of the Association. Chief Burke pointed out that too few fire departments have breathing apparatus for their firemen. The hazards and advantages of certain types of masks were covered in detail. Burke recommended that every fire house should have three pieces of oxygen-breathing equipment on each truck, and that the men should be as familiar with these as they are with their boots, helmets, and other essential equipment.

The visiting fire chiefs were entertained by the members of the New York City Fire Department at the "Midnight Alarm," a four-act show of singing, calisthenics, aerial ladder drills, and fire fighting. Many exhibitions were performed by the fire department "probies," who had just completed a 30-day training period. Their skill in the use of scaling-ladders and in performing acrobatic stunts on aerial ladders was especially commendable. To quote one member of the audience, "This is more exciting than the circus." The last act was the dramatic fighting of a fire in a four-story tenement with a full assignment of manned pumping engines, aerial ladder trucks, search-light trucks, and an ambulance. The building was "laddered," and the arduous task of rescue work was displayed, complete with the use of safety nets.

LOCK JOINT REPEAT PERFORMANCES

1943 – Installing 36" pipe alongside of old wood stave pipeline which it replaces.

1921 – Installation of Lock Joint pressure pipeline on Trestle over Elizabeth River.



10 JOBS SINCE 1920

AS NORFOLK GROWS so must its water supply system. For more than 25 years municipal engineers have met this City's continually increasing need for water by installing 73 miles of Lock Joint Reinforced Concrete Pressure Pipe. Thus a water supply system of sustained high carrying capacity, negligible maintenance cost, immense structural strength and unfailing service is assured for generations.

Repeat orders from Norfolk and many other American cities are convincing evidence of the complete dependability, high quality and economy of Lock Joint Reinforced Concrete Pressure Pipe.

For future projects, large or small, specify Lock Joint Pipe.

A Hazen-Williams Hydraulic Slide Rule will gladly be sent upon request with our compliments.

LOCK JOINT PIPE COMPANY

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P. O. Box 269, East Orange, N. J.

Pressure Pipe Plant – Wharton, N. J. **Sewer Plant – Kenilworth, N. J.**

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SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

Street Cleaning and Refuse Disposal

What Businesslike Administration Means

JOHN O'CONNOR, a member of the editorial staff of the *Boston Herald*, found out when he went to Cambridge, Mass., and talked with City Manager John B. Atkinson that a good deal of businesslike administration is governed by the street cleaning and refuse collection activities.

For example, Mr. O'Connor found out that before Manager Atkinson took over, the city had 100 street cleaners pushing brooms. Now he has only three, plus a corps of more efficient mechanical sweepers. He has yet to find any labor difficulty arising out of the machine-replaced jobs. Anyone, he says, prefers an air compressor to an air hammer.

Once the city received $8,000 a year for its garbage. Today, through competitive bidding, it gets $36,000. The municipal incinerator is now operating on one shift instead of three, and the city is salvaging paper formerly thrown away. The result is an annual saving of $95,000.

In 1942, Cambridge did not have a single snowplow. It has 33 now. Previously, snow removal costs ran to $240,000 per year. Now they stack up at a low of $15,000, or $110 per mile.

This came about without penalizing the city employes, who are today the higest-paid in the state. A laborer who received $30 per week in 1941 now gets $43.50. Semi-skilled workers are paid up to $50. All get sick leave and know that they have an opportunity to get a better-paying job if they demonstrate the ability.

It also meant a reduction in Cambridge's tax rate of from $46.30 in 1941 to $35.50 in 1947, one of the lowest in the state.

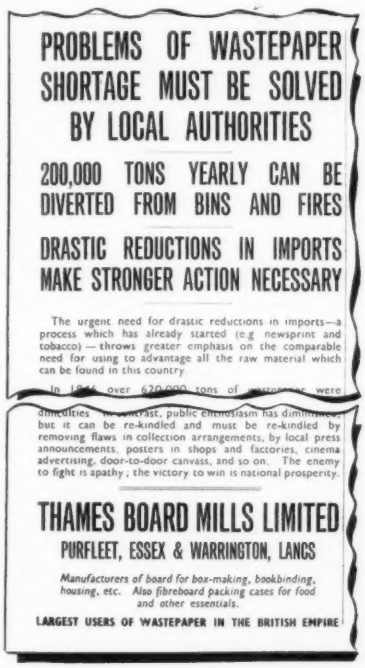
In other words, good management paid dividends in Cambridge.

COURTESY BRITISH COMBINE

Elevator Refuse Collection

A DIFFERENT thought in refuse collection turned up at the Public Works, Roads and Transport Exhibition held recently in London, England. A top-loading truck using an elevator arrangement that picks up a garbage can and empties it into an all-enclosed body was one of the departures from the conventional type of truck. The truck carries two of these elevator mechanisms, one on each side of the cab. It discharges its load by hydraulically tilting the body backward.

No information is available at present indicating the speed at which the elevator operates, to give a measure of the loading rate. Neither have we any information about the height of the enclosed body, either in the loading or dumping position. One cannot say, therefore, whether it would fit American incinerator doors. The appearance of the body would indicate that no compactor mechanism is supplied; presumably it could be furnished if desired.


PROBLEMS OF WASTEPAPER SHORTAGE MUST BE SOLVED BY LOCAL AUTHORITIES
200,000 TONS YEARLY CAN BE DIVERTED FROM BINS AND FIRES
DRASTIC REDUCTIONS IN IMPORTS MAKE STRONGER ACTION NECESSARY
The urgent need for drastic reductions in imports—a process which has already started (e.g. newsprint and tobacco) — throws greater emphasis on the comparable need for using to advantage all the raw material which can be found in this country.
but it can be re-kindled and must be re-kindled by removing flaws in collection arrangements, by local press announcements, posters in shops and factories, cinema advertising, door-to-door canvass, and so on. The enemy to fight is apathy; the victory to win is national prosperity.
THAMES BOARD MILLS LIMITED
PURFLEET, ESSEX & WARRINGTON, LANCS
Manufacturers of board for box-making, bookbinding, housing, etc. Also fibreboard packing cases for food and other essentials.
LARGEST USERS OF WASTEPAPER IN THE BRITISH EMPIRE

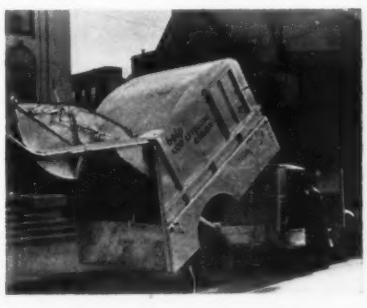
"Austerity" strikes the British municipal official in the form of added burdens, as shown in this advertisement from a British municipal journal. England has been making every effort to salvage and re-use all kinds of scrap material in order to overcome the effects of the drastic reduction in her imports.

Kansas City Enlarges Street-Cleaning Service

WITH the addition of needed trucks and more personnel, the street-cleaning section of the Department of Public Works, Kansas City, Mo., is progressing to a point where every street in the city will be cleaned at least once every two weeks, with some streets cleaned much more frequently. City Manager L. P. Cookingham reports that in July of this year, 2,989 miles of streets was cleaned, compared with 2,143 miles cleaned in June and 2,153 miles in July 1946.

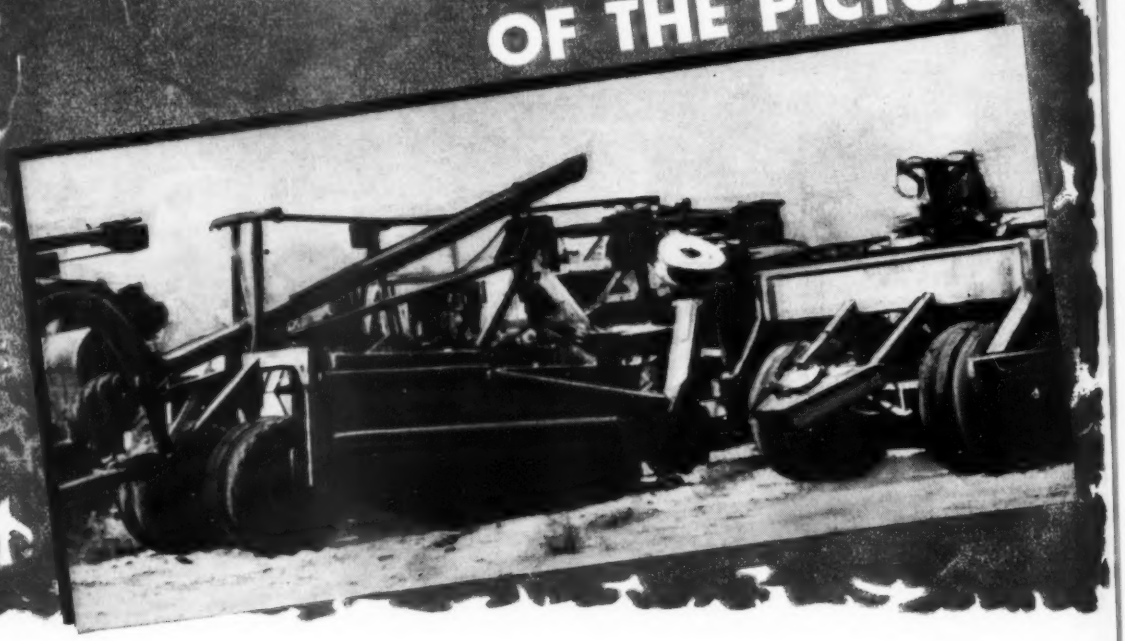
Lexington, Ky., Improves Refuse Collection

City Engineer M. J. McGruder and City Manager William White examine the new Gar Wood Load Packer refuse collection trucks.



The same truck tipped, ready to be emptied. Lexington recently obtained four of these trucks to reinforce a twice-a-week collection service.

KEEP RUST OUT... OF THE PICTURE



WHEN YOU lay up your equipment, brush *Texaco Rustproof Compound* over all exposed metal surfaces. They'll be safely and economically protected against rust by a soft, self-healing, *waterproof* film that removes easily when your equipment goes into service again.

Texaco Rustproof Compound not only prevents rust from getting a start on clean metal — it also gets right under existing rust, stops it from going further, and loosens it for easy removal. *Texaco Rustproof Compound* never hardens or chips off. It lasts long and costs little. In fact —

The cost of rustproofing every machine in your yard with *Texaco Rustproof Compound* is far less than the cost of repairing the possible rust-damage to just one piece of equipment.

Keep rust out of *your* picture this winter. Get *Texaco Rustproof Compound* and helpful suggestions for its use from the nearest of the more than 2500 Texaco distributing plants in the 48 States. Or write The Texas Company, 135 East 42nd Street, New York 17, New York.

EFFECTIVE PROTECTION FOR METAL EVERYWHERE

Use *Texaco Rustproof Compound* to protect metal everywhere. Gas holders, water works, sewage disposal plants, bridges — wherever metal is exposed to weather, or corrosive chemicals and fumes — *Texaco Rustproof Compound* gives protection at low cost. Texaco's 36-page book "Rust Prevention" tells the whole story, offers many money-saving suggestions. Write for your copy today.

TEXACO

TEXACO Rustproof Compound

Tune in . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. See newspaper for time and .tation.

Stop—Check and Mail

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the identifying numbers on this coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
128	129	130	131	132	133	134	135	136	137	138	139	140	141	142
143	144	145	146	147	148	149	150	151	152	153	154	155	156	157
158	159	160	161	162										

Name .....Position .....

Address .....

Pavement Breaker Also Tamps Backfill

98 Rapid Pavement Breaker machines are equipped not only to break paving, but also to tamp three-foot layers at one time. For details, write the R. P. B. Corp., 1517 Santa Fe Ave., Los Angeles 21, Calif.

Diesel Generators

99 The A. C. Schoonmaker Co., Inc., 50 Church St., New York 7, N. Y., will send you information on its line of generating equipment and engineering services. Unit capacities are from 100 to 1000 kw, with immediate delivery of all units.

Shape Street Lights to Fit the Streets

100 Scientific street lighting is obtained through a recognition of the fact that different types of streets require different types of light refraction. The Holophane Co., Inc., Street Lighting Dept., Newark, Ohio, has refractors designed for all needs—for lights that illuminate wide, narrow, or curving streets, whether placed close to the curb or in from the curb. Write for a reprint of the Illuminating Engineering Society's booklet, *Recommended Practice of Street and Highway Lighting.*

Make Your Own Concrete Pipe

101 The Quinn Wire & Iron Works, 1623 12th St., Boone, Iowa, will send you information, prices, and estimates concerning its pipe forms and mixing formulas for the production of concrete pipe. Form sizes are from 12 to 84 inches, for tongue-and-groove or bell-end pipe.

Aerial Surveys for Better Engineering

102 Fairchild Aerial Surveys, Inc., 224 East 11th St., Los Angeles 15, Calif., conducts domestic and expeditionary surveys in the fields of waterways, traffic, utilities, flood control, city planning, and taxation. Write for information on Fairchild's preliminary consultation service, for which there is no charge.

These Diesel Engines Have Plenty of Power

103 Enterprise Engine & Foundry Co., 18th and Florida Sts., San Francisco 10, Calif., will send you information on its standard or its turbo-charged diesels, available in models up to 1,800 hp per unit. Write to the company for details.

Altitude Valves Are Cushioned Against Shock

104 Golden-Anderson single-acting differential altitude valves are cushioned against shock or jar as the valve moves into open or closed positions. With working pressures of 150 to 400 pounds, the valves have a needle-valve control for instant regulation of speed of operation relative to the existing pressure. For catalog, write the Golden-Anderson Valve Specialty Co., Pittsburgh 22, Pa.

One Parking Meter for Two Cars

105 The Alfco Twin Meter serves two parking spaces at a time, and may be used on your municipality's present posts, if desired. Maintenance costs are reduced as a result, there are fewer street encumbrances, and the initial investment is greatly reduced. For further information, write International Meters, Inc., 41 E. 42nd St., New York, N. Y.

All-Year Spreader to Keep Your Street in Shape

106 The Model B-29 Spreader, manufactured by the Highway Equipment Co., Inc., 629 D Ave., N.W., Cedar Rapids, Iowa, spreads right, left, or on both sides and ahead of the rear wheels, giving added safety to vehicle control. The full width of two or four lanes may be covered simultaneously with seal coat, calcium chloride, and sand or cinders for ice control.

How to Lengthen the Life Of Fire Hose

107 The Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich., will send you a booklet which graphically illustrates how this company's fire-hose dryer shortens drying time, prevents mildew and rot, and air-conditions as it dries a fire hose.

Sharpeners for All Mowers

108 The Modern lawn-mower sharpener may be used for any type of lawn-mower—hand, power, gang, or fairway unit. The handle, wheels, roller, or motor remain in position, and no hand filing is required. For Bulletin 25A, write the Modern Mfg. Co., 160 N. Fair Oaks Ave., Pasadena 1, Calif.

Fire Hydrants

109 The Rensselaer fire hydrant is designed to cope with emergencies, to give instant response, and to require a minimum of time for connection of the fire hose. For descriptive printed matter, write the Rensselaer Valve Co., Troy, N. Y.

Allis-Chalmers Annual Review

110 For the first time in several years, Allis-Chalmers Mfg. Co., Box 512, Milwaukee 1, Wis., is again offering, free, its *Annual Review*—a catalog which gives details of the various types of fields that Allis-Chalmers' electric power equipment is servicing: sewage treatment, power generation, municipal construction, etc.

Boring Machine Digs in Clay, Shale, Hardpan, Frozen Ground

111 The "HDMS" boring machine digs a 20-inch-diameter hole 10 feet deep in less than three minutes; it may be used for setting poles of 40 to 45 feet in length and weighing 2,000 to 2,500 pounds. A folder illustrating the operation of this machine, which can dig through hard or soft surfaces, may be obtained by writing the Highway Trailer Co., Edgerton, Wis.

Management Information Service

112 The International City Managers' Assn., 1313 E. 60th St., Chicago 37, Ill., offers mayors, city managers, and other municipal officials the opportunity of making specific inquiries on management and receiving information based on study, analysis, and records of municipal practice. Information may be obtained by writing directly to the organization.

Improve Stability Of Bituminous Pavement

113 Nostrip is a chemical additive for tar and asphalt which reduces the loss of pavement stability caused by the detrimental stripping action of water. Aggregate may be either wet or dry, and no lime or other additions are needed. For literature, write the Nostrip Division, Maguire Industries, Inc., Chanin Bldg., 122 East 42nd St., New York 17, N. Y.

Straight Shot Carburetion In a 6-hp Engine

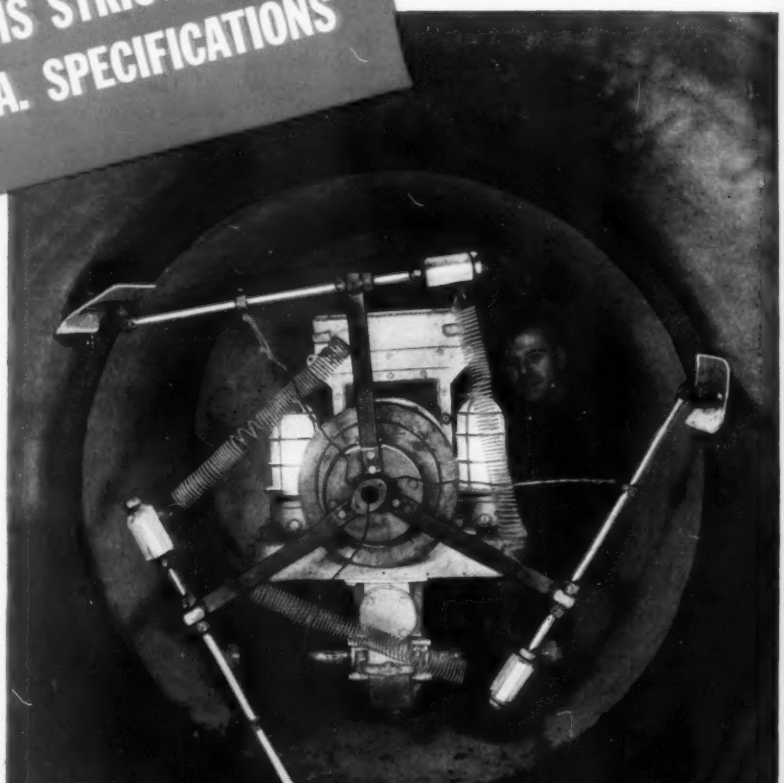
114 Bulletin No. 4502, issued by Salsbury Motors, Inc., a subsidiary of Northrop Aircraft, Inc., 1201 Lexington, Pomona, Calif., describes the Salsbury Model 600 engine—single cylinder, 4-cycle, air-cooled, 6 hp at 2,650 rpm. The outstanding feature is a horizontal carburetor with a short straight intake manifold mounted on an inclined cylinder; the result is "Straight Shot Carburetion."

(*Continued on Page* 23)

CENTRILINE

CONFORMS STRICTLY WITH A.W.W.A. SPECIFICATIONS

▶▶▶ PIPE LINING FACTS NO. 3



▶▶▶▶ The Standard Specifications for cement-mortar protective coatings issued by the American Water Works Association provide: "Interior of the entire line, including both curves and tangents, shall be by centrifugal machine . . . the machine shall apply the mortar by centrifugal action without the use of compressed air and follow its application by automatic trowelling to a uniform thickness and smooth finished surface."

The strict adherence to these specifications by Centriline insures a continuous, dense, smooth lining, applied without rebound that means restored carrying capacity perpetually sustained and longer life to mains. If pipelines are losing efficiency it is time to consider Centrilining. Our engineers stand ready to assist you.

▶▶▶▶ WRITE TODAY FOR THE NEW CENTRILINE CATALOG

CENTRILINE CORPORATION

140 CEDAR STREET · NEW YORK 6, N. Y.

CENTRILINE PROCESS

CEMENT MORTAR LININGS FOR WATER MAINS

Centrifugally Applied

In Strict Conformity with A. W. W. A. Specifications

Stop—Check and Mail

Use Coupon on Page 21

Chlorine Manual

115 A manual compiled for the use of officials engaged in the treatment of water, sewage, and industrial wastes may be obtained from The Chlorine Institute, Inc., 50 East 41st St., New York 17, N. Y. The manual is divided into four sections: Facts about Chlorine, Handling Chlorine, Employe Protection, and Data Section.

What Steel Products Are Available?

116 Joseph T. Ryerson & Son, Inc., P. O. Box 3817, Terminal Annex, Los Angeles 54, Calif., has recently published a 12-page booklet which gives a quick picture story of the steel stocks, facilities, and personnel available at the company's newest plant, in Los Angeles.

New Recording Thermometer And Gauge Bulletin

117 The Bristol Co., Waterbury, Conn., has just published a 16-page Bulletin, No. T835, which gives detailed information of the company's new line of Series 500 recording thermometers and gauges. Complete information covering chart ranges and drives, thermometer bulbs, and measuring elements is included.

Design Information on Concrete Pavements

118 The Portland Cement Association, Dept. A8-4, 33 W. Grand Ave., Chicago 10, Ill., will send you literature giving the latest design information on concrete paving for roads, streets, or airports.

Raise Sunken Paving to Grade, Reduce Maintenance Costs

119 The Koehring Mud-Jack pumps inexpensive cement-sand slurry through small holes drilled into the depressed paving—sidewalks, curbs, gutters — and forms a firm foundation beneath the concrete, preventing serious damage from weakened subgrade conditions. For specifications, write the Koehring Co., Milwaukee 10, Wis.

Front-End Loaders

120 Information about its line of front-end loaders, ⅝-cu.-yd. capacity with an 8-foot lift, may be obtained from the White Mfg. Co., Elkhart, Ind. These loaders, for use with industrial tractors, insure easy maneuverability and facile operator control.

Protect Metal Against Corrosion

121 Rust and corrosion can be positively controlled by cathodic treatment of steel water-storage tanks, submerged cables, steel piling, clarifiers, pipe lines, deep wells, and other submerged metal structures. For details, write the Electro Rust-Proofing Corp., Belleville 9, N. J. Ask for the publication, *Fighting Corrosion with Corrosion.*

Heavy-Duty Loader Has Fully Hydraulic Controls

122 The "Ottawa" Industrial loader is designed and engineered especially for International tractors I-9, ID-9, W-9, and WD-9. The hydraulic pump operates without shovel interruption from front and power take-off; the entire hydraulic system comes shipped as part of the loader. Two loads of ½ yard per minute, lifted to a height of 8 feet, are obtainable. Write Ottawa Steel Products, Inc., Ottawa, Kans., for literature.

From Dry Feed to Liquid Feed

123 For information on how to convert dry feed machines into a mechanism that will feed *Ferri-Floc,* a true liquid coagulant that can help your municipality's water treatment plant to operate more economically or help your sewage plant to speed up operations, write the Tennessee Corp., Atlanta, Ga.

Life-Saving Nets

124 Interest in life nets for fire and police departments has increased steadily since the succession of disastrous hotel fires. A net that has proved its worth in many emergencies is made by Atlas Safety Equipment Co., Inc., New York 7, N. Y. Details about its special safety features and cost will be furnished municipal officials on request.

This Trencher Can Dig Around Pipes

125 The telescoping ladder-type boom on the Parsons 221 Trenchliner enables this mechanism to dig over and under obstructing pipes in the trench, almost completely eliminating hand-work. The Parsons Co., Newton, Iowa, will send additional information on request.

Lightning Arrester Protects Distribution Equipment

126 The Type E Distribution Lightning Arrester, manufactured by the Line Material Co., Milwaukee 1, Wis., is designed for the protection of primary distribution systems and equipment in a voltage range up to 15,000 volts, available in ratings of 1, 3, 6, 9, 12, and 15 kv. Write for Bulletin 47060.

It's Not the Water— It's the Equipment

127 In the majority of cases, it is not just the water in the pool but the playground equipment that makes a municipal pool popular enough to be self-supporting. The American Playground Device Co., Anderson, Ind., will send illustrated literature describing its pool slides and diving boards, life buoys, guard chairs, and pool ladders.

Three Pressure and Volume Choices on This Fire Pump

128 The Barton-American Duplex-Multistage centrifugal fire pump incorporates automatic valves which deliver a choice of three pressure and volume selections: large capacities at normal pressures delivered by the capacity pump, normal high pressures delivered by the high-pressure pump, and pressures of 250 pounds and higher delivered with both pumps operating in series at low engine speeds. Bulletin 8733 gives all the specifications and may be obtained by writing to American-Marsh Pumps, Inc., Battle Creek, Mich.

Make Your Own Concrete Pipe

129 Quinn Standard pipe forms and mixing formulas may be used in your own town to produce concrete pipe by hand, wet or semi-dry processes, in sizes of 12 to 84 inches in diameter (tongue-and-groove or bell-end). For information, prices, and estimates, write the Quinn Wire & Iron Works, 1623 12th St., Boone, Iowa.

House Numbers That Are Legible

130 Reflecto Letters, Inc., 411 East 101st St., New York 29, N. Y., manufactures three types of house numbers — Perma-Glow, which glows in the dark; plastic bronze, matching brass and bronze hardware, and black plastic, which is modern and neat in design. For further information, write to the company.

Trolley Coaches Are Fast, Smooth, Odorless

131 Trolley coaches are relatively fast, smooth-riding, and maneuverable. One of the great advantages is the elimination of exhaust gases (the trolley coach is powered by overhead electricity). Information on request from the Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

Water and Sand Separator

132 The McCurdy water and sand separator, which is applicable to other fluids, is a vertical-pressure type, built of fabricated steel, with helical flow and centrifugal action. It is usable with water walls that produce sand and silt in the water and will clean water pumped from streams or lakes before the water enters a reservoir, water tower, or distribution center. The McCurdy Sand & Water Separator Co., 4875 Pacific Blvd., Vernon 11, Los Angeles, Calif., will send you a folder describing the apparatus and including a sectional drawing of the mechanism.

Rock Drills Paving, Breakers Make Street Repairs Easy

133 Catalog No. 42A describes and illustrates Thor Sinker rock drills, obtainable in weights from 44 pounds to 80 pounds. Also described is the patented Thor valve and valve chest that assures economy of air and uniform stroke. The catalog also gives descriptions of Thor's line of paving breakers, clay diggers, sump pumps, and other air tools. Write to the Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago 6, Ill.

Post-War GMC Trucks

134 Cabs are 3¾ inches longer and 9⅝ inches wider than pre-war GMC trucks, have tubular frame adjustable seats with almost twice as many seat springs, new windshields 5½ inches wider and 2 inches higher, larger doors and windows, and other improvements in motor and chassis. Details may be obtained from the GMC Truck & Coach Div., General Motors Corp., Detroit, Mich.

Reduce Tank Maintenance By Cathodic Protection

135 The Rusta Restor method of cathodic control against corrosion is inexpensive to install, and it effects a valuable economy in tank maintenance. For details of this method, write Rusta Restor Division, Johnson & Jennings Co., 851 Addison Rd., Cleveland 14, Ohio.

Electronic Controls Aid Incinerator or Boiler Operation

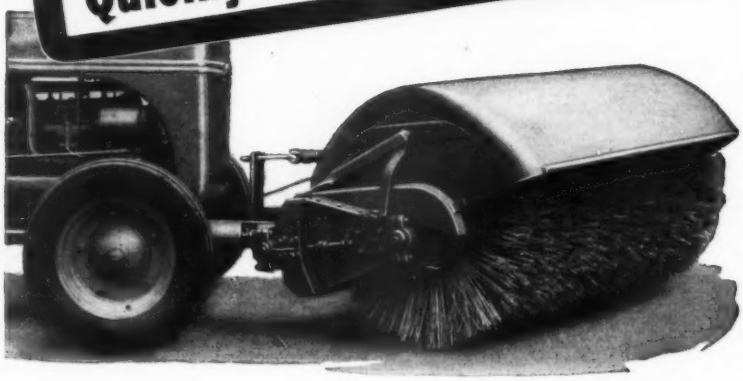
136 Condensed Catalog Bulletin No. 3-6400, issued by Wheelco Instruments Co., Chicago 7, Ill., contains descriptions of the company's line of controls—indicating, controlling, and combustion safeguard instruments. Also included is an explanation of the "Wheelco Electronic Control Principle," which is incorporated in Wheelco's millivoltmeter, potentiometer, and resistance thermometer measuring controllers.

Renovate Concrete Structures

137 Guniting, the application of concrete by means of a cement gun, is rapid, smooth, and highly economical. Reinforcement and partial rebuilding may be accomplished by this methods on reservoirs, sewers, and canal, ditch, and drain structures. For details, write The Gunite Concrete & Construction Co., 1301 Woodswether Rd., Kansas City 6, Mo.

(*Continued on Page* 24)

Remove RUBBISH and SNOW
from Your Streets, Alleys and Walks
Quickly-Easily-at Low Cost



LITTLE GIANT POWER SWEEPER

If you find hand sweeping and snow shoveling too costly and slow, but your budget does not permit extensive expenditures for mechanical equipment, then the Little Giant Sweeper will meet your requirements.

For All Tractors, Jeeps

Little Giant Sweeper mounts on all tractors and Jeeps, normally requiring less than 90 minutes to attach. Operates from power take-off. Brush sets at 30 degree angle. Sweeps to right side of tractor, outside of wheel path. Sweeps against forward motion of tractor for increased efficiency. Dependable chain drive—all moving parts are shielded for operator's protection.

Long-Wearing Brush—Dust Hood

Brush lengths of 5, 6, 7, 8 and 9 feet can be furnished. The 5-foot length is recommended for sidewalk snow sweeping. Long-wearing Palmyra fibre brush, refillable at nominal cost. Adjustable ground pressure—brush can be quickly set to fit all sweeping conditions. Dust hood helps keep tractor clean—assures clear vision for operator. Hood can be removed in 15 minutes for sweeping snow.

Little Giant gets the sweeping job done faster. It quickly pays for itself in labor saved. The initial investment is low—very little upkeep expense. Can be used year-round—for snow in the winter and rubbish the rest of the year.

Designed by experts with years of experience in the sweeping field. Widely used by municipalities, airports, road contractors and industrial concerns.

We are in production and can make prompt delivery. Let us send you complete information and prices. Write

LITTLE GIANT
PRODUCTS, INC.
1585 N. ADAMS ST.,
PEORIA 3, ILLINOIS

Check and Mail

Use Coupon on Page 21

Elevated Steel Tanks

138 The R. D. Cole Mfg. Co., Newman, Ga., will send you estimates of the cost of erecting elevated steel tanks. The company designs, fabricates, and erects the structures in capacities of 5,000 to 2,000,000 gallons, with hemispherical, ellipsoidal, or conical bottoms. When writing, state capacity desired, height to bottom, and location.

Make Playgrounds and Pools More Fun

139 A complete line of equipment for municipal playgrounds and swimming pools—coasters, slides, swings, trapeze bars and rings, springboards, life guard chairs and ropes, buoys, ladders, and pool cleaning equipment—is described in Catalog No. 21, distributed by General Playground Equipment, Inc., Kokomo, Ind.

Anthracite Filter Media for Efficient Filter Operation

140 The use of Anthrafilt doubles the length of filter run, decreases back wash requirements, provides a highly effective media for treatment of municipal and industrial water; better results are obtained in the removal of bacteria, micro-organic matter, taste, odor, and fibrous material than would be possible with a single length of filter run. For information, recommendations or quotations, write Palmer Filter Equipment Co., Box 1655, Erie, Pa., general sales and engineering representatives of the Anthracite Equipment Corp., Wilkes-Barre, Pa.

Waterproof Joint Sealer Proves Impervious to Weather

141 Para-Plastic joint sealer, a rubberized sealing compound for cracks and joints in concrete, forms a resilient, adhesive bond which neither cracks nor separates from extreme heat or cold (causing compression or contraction of joints). For details, write Servicised Products Corp., 6051 West 65th St., Chicago 38, Ill.

Two-Wheel 7- and 10-Ton Trailers

142 The Carryhaul trailer is equipped with a hydraulic lift operated by a removable jack handle, which facilitates raising of the trailer to towing position, even when there are 7 to 10 tons of weight on it. Models 7 and 10 are designed for use with heavy-duty trucks where attachment can be made close to the rear axle. Write the Martin Machine Co., Kewanee, Ill., for literature.

Making Leaky Masonry Dry

143 The Ranetite Mfg. Co., 1917 South Broadway, St. Louis, Mo., manufactures cement waterproofing that may be applied to the outside of structures as well as on inside walls: basements, tunnels, dams, tanks, silos, and concrete roofs. Ranetite VVV contains no soap or soap compounds.

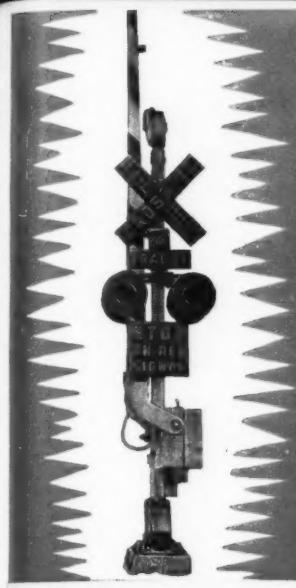
Stationary Diesels

144 Superior Engines has issued a new bulletin, No. 4705, which describes all models of the company's 4-cycle, cold-starting, mechanical-injection stationary diesel engines. Write to the General Sales Office, Superior Engine Div., The National Supply Co., Springfield, Ohio.

Citizens Like Soft Water

145 If one of the problems your municipality is facing is that of hard water, you may be interested in investigating the advantage of Refinite water-softening equipment. Write to The Refinite Corp., Refinite Bldg., Omaha, Nebr.

(Continued on Page 26)



WHERE PUBLIC SAFETY COUNTS *MOST* . . .

ONLY THE BEST IS GOOD ENOUGH

Model 10 HIGHWAY CROSSING SIGNALS

Best Buy in Safety

- Operate automatically on the closed circuit principle.
- Force vehicles to a complete stop in time of danger.
- Safeguard against "hidden second train" accidents.
- Model 10 efficiency frequently results in the authorization of faster train schedules.

GET THE ADVANTAGES OFFERED ONLY IN *Model 10*

ACKNOWLEDGED SUPERIORITY—80 railroads use Model 10 Signals and commend their unfailing vigilance at thousands of hazardous crossings throughout the world.

SPECIAL RECOGNITION—Model 10 Signals are the *only* railroad-highway crossing signals in all railroad history to be honored with a Certificate of Merit from the New York Museum of Science and Industry.

POSITIVE PERFORMANCE—Model 10 Signals operate as dependably as semaphore signals . . . and during their 11 years of life-saving service NOT ONE FATALITY has occurred as a result of operation failure on the part of Model 10's.

TIME-TESTED ECONOMY—The real test of economy comes with years of service. Model 10 Signals are engineered to combine permanent peak efficiency with low maintenance cost. Model 10's will always be the *best buy in safety*.

Write for Bulletin
G16—AC10

U. S. Pat. Nos. 2,137,196; 2,362,710; 2,372,579. Pat'd in Canada 6-27-39

MODEL 10 HIGHWAY CROSSING SIGNALS ARE THE PRODUCT OF

WESTERN RAILROAD SUPPLY CO.

Designer and Manufacturer of Safety Devices for Railroads

Foreign Representatives
QUITTENDEN COMPANY, INC., 35 SOUTH WILLIAM ST., NEW YORK 4, N. Y. and LONDON
INTERNATIONAL STANDARD ELECTRIC CORP., 67 BROAD ST., NEW YORK 4, N. Y.

2406-2436 SOUTH ASHLAND AVE.
CHICAGO 8, ILL.

CERTIFICATE OF MERIT for Safety awarded to WESTERN RAILROAD SUPPLY CO. by the NEW YORK MUSEUM OF SCIENCE AND INDUSTRY

Bucket unloads in less than a minute under fingertip control.

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

Tapered body construction assures speedy discharge regardless of compression.

This new HEIL
COLECTO-PAK
Municipal Refuse Disposal Body

gives you

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Write for bulletins.

ARMY NAVY
THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Check and Mail

Use Coupon on Page 21

Parked Cars No Obstruction To 3-Wheel Street Sweeper

146 The Wayne motor sweeper operates on three wheels; the result is a street sweeper that is highly maneuverable about parked cars and other street obstructions. The apparatus has a 2-cubic-yard capacity. For information, write Wayne Motor Sweeper Div., Brown-Bevis Co., 4900 Santa Fe Ave., Los Angeles 11, Calif.

Cast Iron Pipe From Two to Eighty-four Inches

147 Cast-iron pipe, plain cast or spun centrifugal, may be obtained from the Warren Foundry & Pipe Corp., 11 Broadway, New York 4, N. Y. In sizes of from 2 inches to 84 inches, the pipe may be obtained with a variety of fittings and manufactured with several different types of ends. Write for specifications.

Electric and Manual Duplicators

148 Mimeograph brand duplicators, manufactured by the A. B. Dick Co., Chicago, Ill., may be obtained in either electrically driven or hand-operated models. No special training is required of the operator, and letters, forms, post cards, or folders may be run off in either black and white or in colors.

Cumulative Parking Meters Give Full Value

149 The Miller meter is designed on a cumulative principle that assures the parker full value for his nickels and pennies; the taxpayer is satisfied with the service he receives, and the municipality with the revenue. For full details of the exclusive Miller meter feature, write to the Duncan Meter Corp., 835 No. Wood St., Chicago 22, Ill.

Emergency Electric Generating Sets

150 Fairbanks, Morse & Co., Dept. N 9, Chicago 5, Ill., will send you literature on its line of generating sets, installed as standby units, either A.C. or D.C., with remote and automatic start; 350- to 35,000-watt capacities.

How to Hear a Water Leak

151 The M-Scope is a telephone-principle device whereby the operator, through earphones, hears water or other liquid leaks, can trace the path of hidden pipe, and locate the dead end of buried pipes. For an illustrated 16-page booklet, write The Fisher Research Laboratory, Inc., Palo Alto, Calif.

High Water Main Capacity Means Low Pumping Cost

152 A water main which maintains high carrying capacity is economical and renders the right kind of service to its community. The Centriline method of centrifugally lining water mains with cement mortar, yielding a smooth interior, is worth investigating whether it is an old main that is losing its efficiency or a new main that is being planned. For the latest catalog, write the Centriline Corp., 140 Cedar St., New York 6, N. Y.

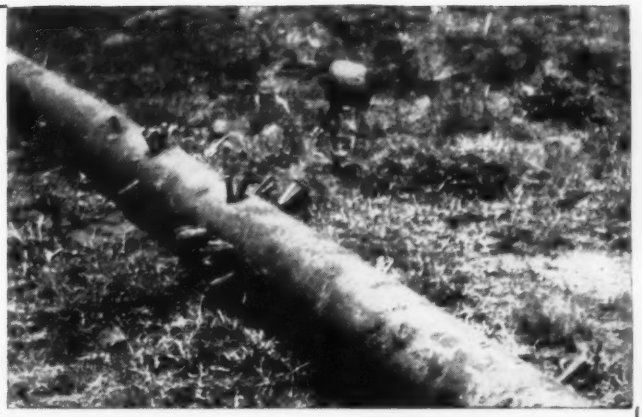
Right Tool Easy to Find On This Service Truck

153 The interiors of American Bodies service trucks are liberally provided with shelves, books, trays, drawers, and boxes for the efficient transportation of the many tools required for maintenance and construction jobs, with interiors specialized for power, light, telephone, water, gas utilities, etc., and including overhead equipment. Write to The American Coach and Body Co., 9503 Woodland Ave., Cleveland 4, Ohio, for further information.

(*Continued on Page* 28)

STOP THOSE LEAKS

DON'T replace that leaky Pipeline . . . even if it is like this →



Section of Pipeline Showing Redwood Plugs Stopping Leaks. BELIEVE IT OR NOT! This same Pipe was Cement Lined IN PLACE by TATE PROCESS . . . Now Leak and Corrosion Proof and will give new pipe-like performance for many years.

No matter whether your pipelines are leaky like the pipe pictured above, or corroded like that at left, they can be cleaned and cement lined just where they lie and made like this →

What TATE PROCESSING your pipelines means to you

1. Water pipelines may be cleaned and cement lined without removal.
2. Protective coatings one quarter inch or more in thickness.
3. Cement lining compacted under pressure of upwards to 130 pounds to square inch. Assuring maximum density of coating.
4. Leak problems eliminated. Cement lined mains cannot corrode.
5. Pumping costs reduced to minimum. Capacities restored.
6. A "TATE" lined pipe gives new pipe-like performance, for only portion of new pipeline cost.

This method of rejuvenation of existing pipelines is being used extensively the world over . . . Why not consult us, without obligation—For further particulars and prices.

TATE PIPE LININGS, INC. Andover, Massachusetts

CALIF. REPRESENTATIVE: 849 E. Lime Ave. • Monrovia • Phone Monrovia 1-3913

TATE PROCESSES Operated in United States of America, England, South Africa, Australia, New Zealand.

GREENLEE PIPE PUSHER SPEEDS, SIMPLIFIES PIPE INSTALLATIONS

UNDER STREETS...UNDER RAILWAYS, *sidewalks, lawns and other obstacles*

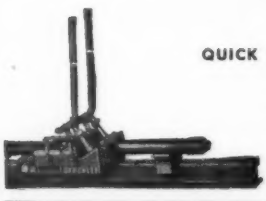
With a GREENLEE Hydraulic Pipe Pusher one man can *push pipe* through the ground, *easily, quickly* — under streets, railways, walks, lawns, flooring and other obstacles.

Think of the time, labor and inconvenience this saves! Eliminates extensive ditching as just a short trench accommodates the pusher . . . no tearing up of pavement, lawns, floors . . . eliminates back-filling, tamping, tunneling, repaving. Cuts job time to a fraction!

Get facts and figures on the timesaving GREENLEE Hydraulic Pipe Pusher which, as many owners report, "pays for itself on the first few jobs." Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2030 Columbia Avenue, Rockford, Illinois.

TOOLS FOR CRAFTSMEN

GREENLEE



QUICK FACTS ABOUT THE GREENLEE HYDRAULIC PIPE PUSHER

Easy — one or two men can easily operate on any job. *Portable* — compact, easy to carry to job and set up. *Fast* — operates at six different speeds. *Two models* — (1) for pipe up to 4-inch; (2) for larger pipe, drainage ducts, concrete sewer pipe. Do the job easier, quicker with a GREENLEE.

Check and Mail

Use Coupon on Page 21

Proper House Numbering

154 Stamped and embossed metal house numbers have added legibility. If your municipality is planning a re-numbering program, you may be interested in obtaining data from Premax Products, Div. of Chisholm-Ryder Co., Inc., 4820 Highland Ave., Niagara Falls, N. Y.

One Man Can Operate A Chain Saw

155 The Homelite Corp., 109 Riverdale Ave., Port Chester, N. Y., will send you an illustrated bulletin describing its new portable electric chain saw, which can be operated by one man for limbing, felling, and bucking.

Broom Fibres for Street Cleaning

156 Fibers that give good service for street sweeping brooms for long periods are economical in cost and in labor otherwise sidetracked to refilling. The Otto Gerdau Co., 82 Wall St., New York 5, N. Y., will give you information about its African bass, India Palmyrah stalks, mountain hickory splints, and steel wire sweeper stalks.

Adapt Fog Fire Equipment To the Fire

157 The Hardie high-pressure pump delivers at a minimum of 800 psi a finely atomized fog, intermediate spray, or heavy stream, so that the most efficacious fire extinguishing effect can be instantly obtained. Write for literature to The Hardie Mfg. Co., Hudson, Mich.

Insulated Cable Has High Heat Resistance

158 Hazard Performite signal cable has been found excellent for fire alarm, police signal, and traffic control use because of its high heat resistance and its free-stripping quality, which effects a valuable time-saving in laying work. Write to Hazard Insulated Wire Works, Division of The Okonite Co., Wilkes-Barre, Pa., for information.

Meters for Ten-Hour Parking

159 The Park-N-Lot meter accepts coins for parking up to 10 hours. Wide variations of coin and time combinations are possible. For details, write the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla.

Bronze Memorial Signs

160 The United States Bronze Sign Co., Inc., Dept. AC, 570 Broadway, New York 12, N. Y., will send you an illustrated catalog that gives all the facts about its bronze signs for memorial and decorative purposes.

Chlorination of Sewage

161 Chlorination of sewage is important in the winter, too—not just for odor control, prevention of septicity, and effluent sterilization, but also for the reduction of hydrogen sulfide damage, digester supernatant treatment, and prevention of sludge bulking. Write for information about the Visible Vacuum Chlorinator to Wallace & Tiernan Co., Inc., Newark 1, N. J.

Fire Hydrants With Self-Oiling Top

162 The Mueller fire hydrant has a self-oiling top which eliminates periodic oiling. This is just one of the features of the hydrant that make maintenance and operation easy. For more details, write the Mueller Co., Decatur, Ill.

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WORLD'S LARGEST MOST POWERFUL TRACTOR

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BUILT TO GET MORE WORK DONE

- Weight: 40,000 pounds.
- Power: 2-Cycle General Motors Diesel — 163 hp. at flywheel.
- Torque converter automatically balances load and speed without gear-shifting.
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- New type, adjustable split seat.
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"CLEAN-UP HITTER"

This "Caterpillar" Diesel D2 Tractor holds a key position in the sanitary line-up at Freeport, Long Island, N. Y.

Hard-hitting and steady-going, it does an efficient job at the incinerator plant, pushing a daily average of 50 to 70 tons of rubbish into the hoppers with its bulldozer.

The tractor works a regular schedule of 16 hours a day. When it's not on the job at the incinerator it is used for spreading ashes on the dump, clearing brush and building parking lots.

Says Edwin C. McKeenan, Freeport's Sanitation Superintendent: "We bought a 'Caterpillar' Diesel on its reputation for dependability, and we are very well pleased. In spite of extremely rough usage, this machine stands up better than any equipment previously used."

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DIESEL ENGINES • TRACTORS
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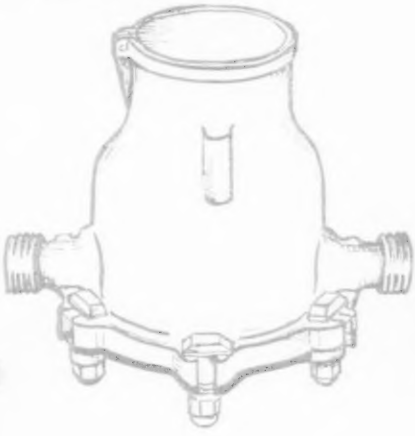
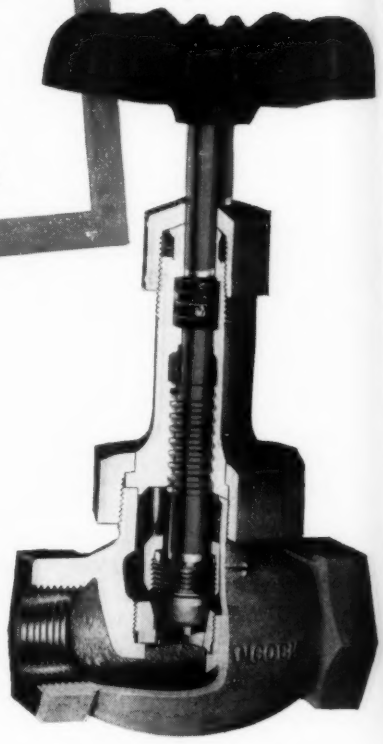
OVERCOME RUST AND CORROSION WITH DURONZE* ALLOYS





Water companies and city engineers are in a good position to appreciate the tremendous toll taken each year by rust and corrosion. These twin public enemies destroy valuable equipment and greatly increase maintenance expense.

With the engineering copper-base alloys now available this needless waste can be drastically cut in many cases. For example, the Hackensack Water Company found that rustable bolts and nuts on water meters corroded so badly that they frequently had to be chiseled off when opening the meters for periodic examination. They took the initive some years back and purchased a supply of bolts and nuts made from Duronze. A considerable saving is realized in material cost and by elimination of unnecessary labor. Duronze bolts and nuts are non-rusting, have exceptional corrosion resistance, average more than 90,000 psi in tensile strength and can be used over and over again.

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BRONZE • DURONZE
Strip • Rod
Wire • Tubing

Other applications for Duronze alloys are valve and pump parts, fasteners, steps, walkways and other structural parts, screens and corrosion-resistant tubing.

Contact the nearest Bridgeport office for information on how Duronze alloys can save you money. In the meantime write for 80-page Duronze Manual.

Reg. U. S. Pat. Off.

"Bridgeport" BRASS CO.

BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONN. • *Established 1865*

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana
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Duronze Alloys—PRODUCTS OF

BRIDGEPORT BRASS

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Bulldozer-Shovel

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Tracks are not "tied-down" but oscillate freely as in normal tractor operation. Means better traction — and level cutting edge at all times.

TIP-BACK BUCKET

Bucket tips back automatically in carrying position to prevent spillage. Also assures full bucket capacity and better cutting action in digging range.

HYDRAULIC BUCKET CONTROL

Bucket is dumped and returned by hydraulic power. Reduces operator fatigue, eliminates maneuvering to close bucket, relieves tractor and vehicle being loaded of shocks.

DOWN PRESSURE

Double acting rams permit tractor weight to be applied to Bucket or Bulldozer cutting edge, for easier penetration into hard materials.

Here is a *real* Tractor Shovel, the outstanding machine in the 2 yard class. From its long, ground gripping tracks on up, it's every inch a superior unit — built to deliver more yardage, consistently, over an extremely wide range of Shovel or Bulldozer work.

Built into the powerful TD-14 International Diesel the Hough Bulldozer Shovel provides full visibility in every direction: tractor frame mounting to permit free track oscillation: lowest over-all height; automatic TIP-BACK Bucket; simplified hydraulic control; hydraulic Bucket control; powerful crowding action coupled with positive hydraulic down pressure. Compare before you buy — do you know of any other unit that gives you all these features?

The Model 14 "packs a mighty wallop" — it's a big machine, with plenty of weight for traction; plenty of power for tough going, built long, wide and low for greatest stability and maneuverability. Over 25 years of engineering experience in building thousands of Tractor Shovels is engineered into the Model 14. For complete details see your International-Hough industrial distributor today!

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Mr. Mayor or Manager:

Inaugurated late in 1945, this Service is now being used regularly by nearly 300 cities. It will enable you to receive immediate expert advice and reports on management problems in *your town or city.*

You write, wire, or telephone for information on what is considered best practice in handling a specific municipal problem, what other cities are doing about it, what the trend is, etc. Over the past three decades ICMA has collected on a nationwide basis a vast amount of information which it now makes available to all cities on a subscription basis.

1. In addition to replies on specific inquiries, subscribing cities receive from one to 12 subscriptions (depending on size of the city) to the monthly journal *Public Management* published since 1919, and devoted to the improvement of municipal administration.

2. Cities also receive from one to 10 copies of the 1947 *Municipal Year Book*, the authoritative resume of the activities and statistical data for more than 2,000 American cities, published since 1934.

3. One copy each of special information reports issued monthly. *Partial list of recent reports:*

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California	23 cities	Kansas	11 cities	Ohio	9 cities
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MIS is available to all cities and towns on a subscription basis regardless of form of government. The fee varies with the size of the city from $20 for under 5,000 population to $400 for cities of 250,000 to 500,000. For more details write:

INTERNATIONAL CITY MANAGERS' ASSOCIATION

1313 East 60th Street **Chicago 37, Illinois**

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MECHANICALLY CLEANED SCREENS—with intermittent automatic control. *Bulletin 258.*

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JET AERATION—exclusive method produces an unprecedented rate of oxygen absorption.

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Including many Exclusive Developments

Many years of close collaboration in the design of municipal and industrial waste treatment plants enable us to furnish a complete line of installation-tested equipment. Our staff of Sanitary Engineers is exceptionally well qualified to cooperate with consulting and operating engineers in suggesting the process of treatment and type of equipment best suited to individual needs. Additional modern plant facilities have increased our production capacity many times. Inquiries on new installations or improvements in existing plants will receive prompt attention.

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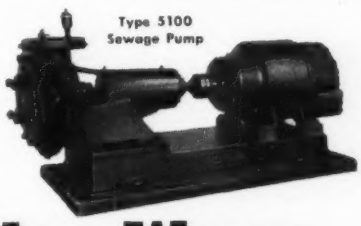
American sewage and sludge pumps are designed to give outstanding service under severe conditions. Unusually strong and rugged in construction, they have ample factors of safety: generous shaft diameter, sturdy bearings, proper bearing span, finest materials, extra metal, careful inspection and testing.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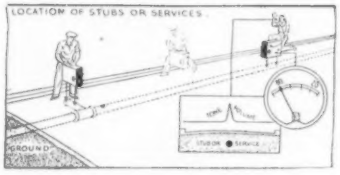

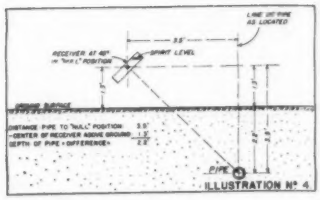

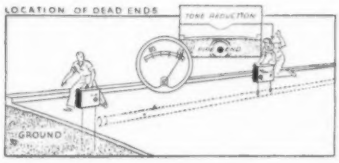

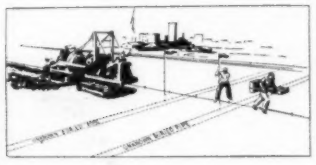

The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

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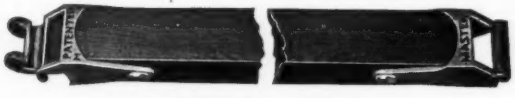
The REGULAR, a light rod,
Fir stock 1¾ x 1¾ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
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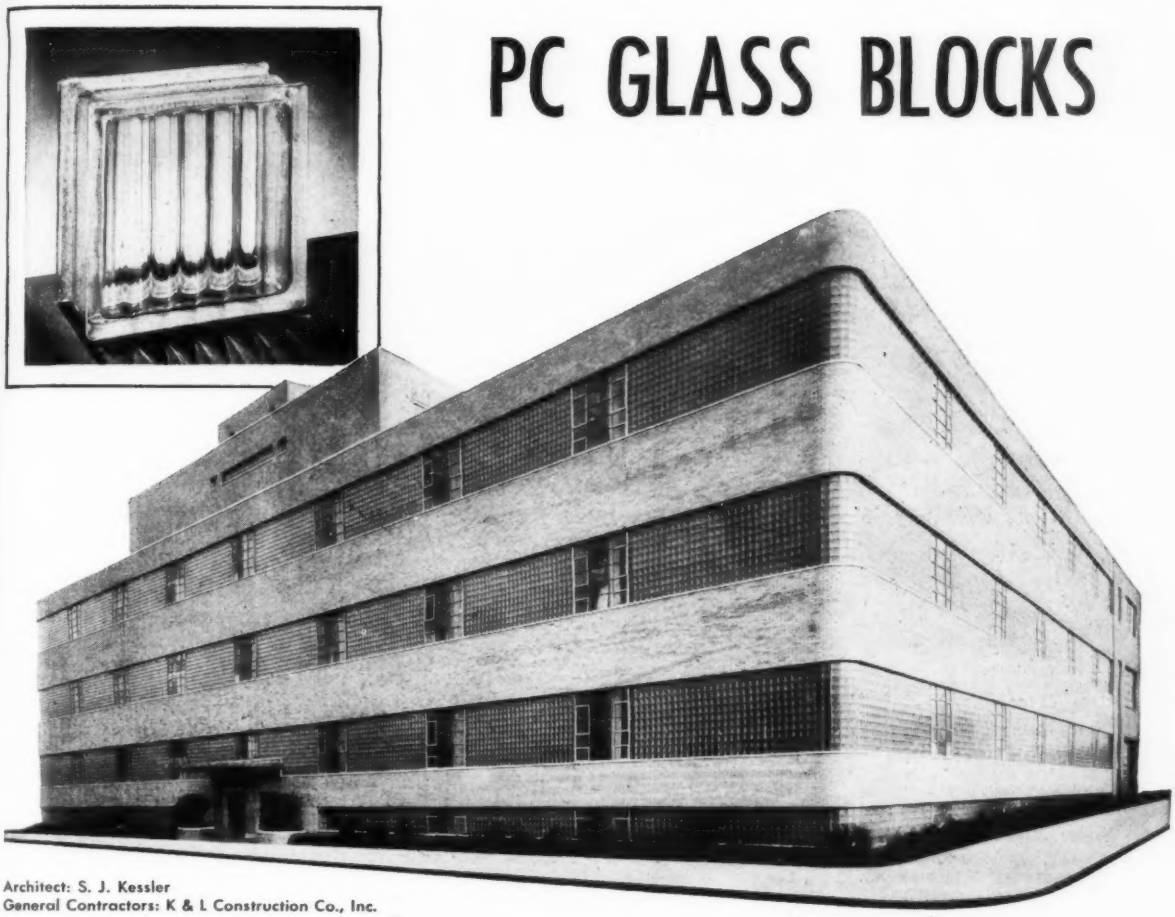
BUY U. S. SAVINGS BONDS

Regularly

Ask where you work . . . Ask where you bank

The modern material for modern buildings

PC GLASS BLOCKS



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Modern appearance, modern efficiency, modern economy—those are the main advantages you get when you specify PC Glass Blocks.

Long, clear panels of gleaming glass blocks, make this plant a thing of beauty. The spacious interior, with plenty of cheery clear daylight, is a pleasant place to work.

PC Glass Blocks are hollow, have definite insulating properties. So heat losses are reduced to the minimum. Infiltration of chilling drafts and of destructive dust and grit is prevented.

These are some of the reasons why PC Glass Blocks are being used for so many new construction and modernizing projects. You will want to know all the advantages you get with PC Glass Blocks. Send the coupon today for our authoritative booklet. Pittsburgh Corning Corporation also makes PC Foamglas Insulation.

PC GLASS BLOCKS . . . the mark of a modern building

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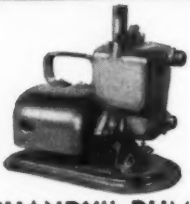
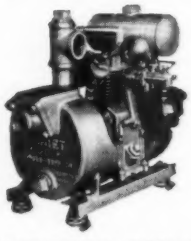


"HANDY" PUMP

A tiny pump weighing only 20 lbs., remarkable for performance. Fitted with pipe or common garden hose, this pump will lift up to 25 ft. Delivers 8 GPM at 40 lbs. pressure. Electric motor driven – self-priming. An extremely handy, dependable and trouble-free pump for all kinds of pumping jobs.



"MIDGET" PUMP

The ideal, lightweight, self-priming pump. Easily handled – weighs only 60 lbs. Will pump 3000 GPH at 20 ft. head, 5 ft. suction lift. Rapid automatic priming. Husky – trouble free – non-clogging. Whatever your pumping requirements may be up to 125,000 GPH there is a Gorman-Rupp Blue pump to do the job quicker and better.

HERE'S A GOOD BUSINESS FOR SOMEONE IN YOUR TOWN!

Public Health Officials - Show this Announcement to Sanitary Service Operators in Your Community!

The New Odorless Sanitary Cleaner is modern apparatus for cleaning septic tanks, vaults and cisterns. It is complete in every respect. It is shipped ready to mount on standard truck chassis, 158 to 161 inches length. It is built by the Gorman-Rupp Company, a leader in the pump industry.

This O. S. C. unit is approved by public health officials because it eliminates old-style, makeshift equipment – often open tanks, diaphragm hand pumps and even shovels. With an O. S. C., cleaning the septic tank is as casual and efficient as any other household service.

The O. S. C. has a powerful Gorman-Rupp Centrifugal Sewage Pump of self-priming design. Septic tanks of 500 gallon size are cleaned in 15 minutes; 1,000 gallon size in 20 minutes. A 25,000 gallon septic tank was cleaned in just 10 hours.

It's water-tight, fly-proof and entirely enclosed. A boon to operators now in business. A real opportunity for the veteran wanting his own business. Buy an O. S. C. unit under the G. I. Bill of Rights.

For further information and descriptive literature write

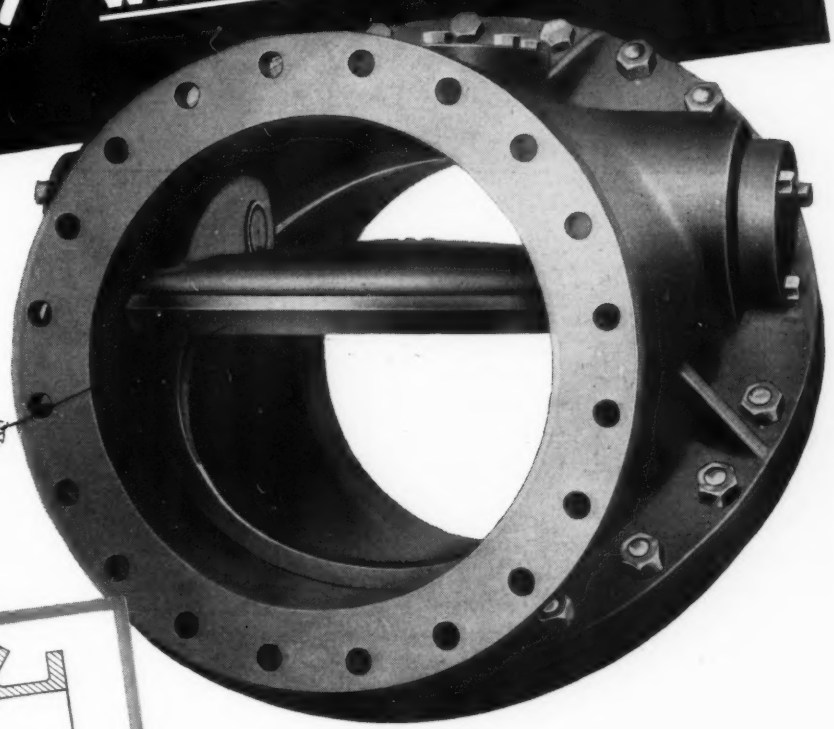
THE GORMAN-RUPP COMPANY

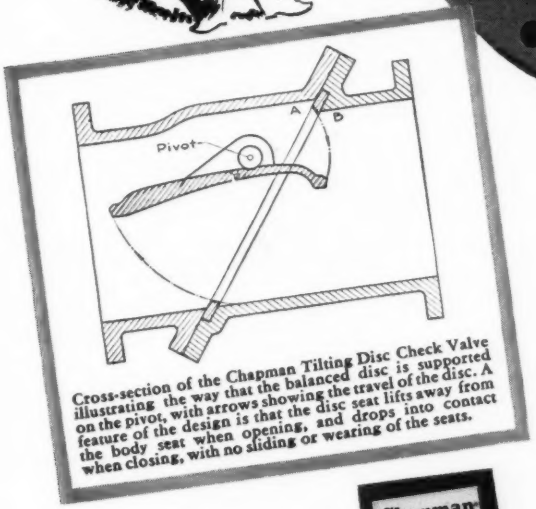
GORMAN-RUPP PUMPS — UNSURPASSED FOR PUMPING FAST

343 N. Bowman St., Mansfield, Ohio

CHAPMAN TILTING DISC CHECK VALVES

Close Seat WITHOUT SLAMMING WITHOUT RUBBING





Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

Chapman Tilting Disc Check Valves are *different* in design. Unlike ordinary swing check valves, they have a balanced hinge-pinned disc which works *with* the stream. The disc closes *quickly* and *quietly* because of the cushioning effect of the stream against the short flap of the disc. This prevents slamming and the resultant pipe-line stresses.

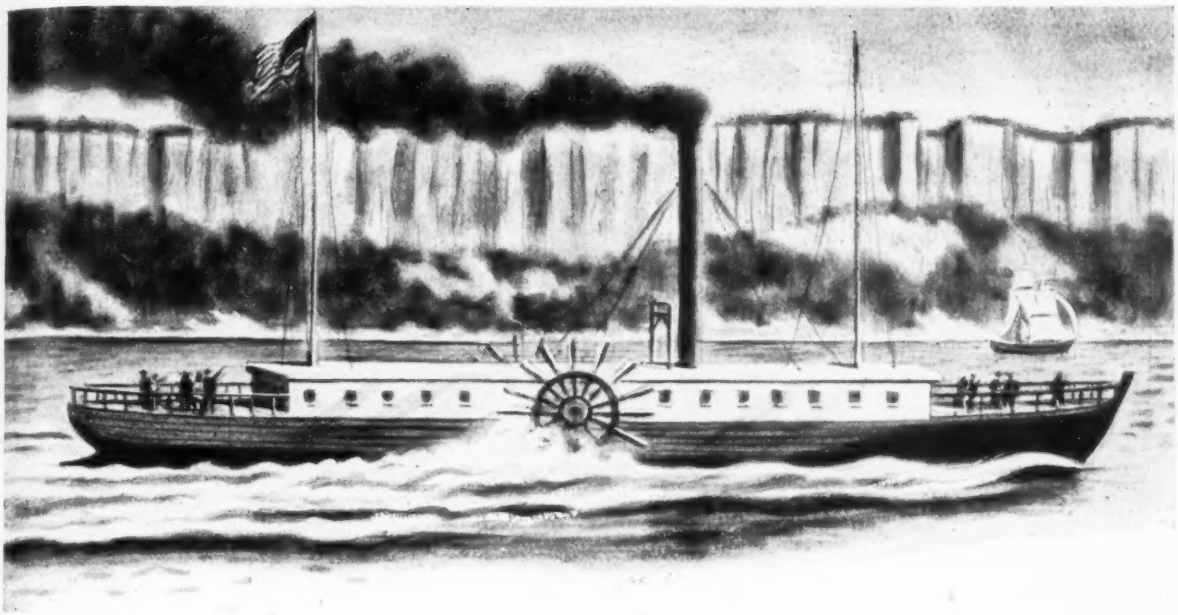
On opening, the disc seat *lifts away* from the body seat without rubbing; when closing, it drops freely in place. Also the disc rides smoothly on the flow of the stream, minimizing wear on bearings and hinge pins.

Maintenance costs are cut, and head losses are reduced as much as 65% to 80% over those experienced with conventional type check valves. And when installed on pump discharge lines, substantial power savings are effected.

Chapman Tilting Disc Check Valves are made in iron and steel. *Send for bulletin.*

The CHAPMAN Valve Mfg. Co.

INDIAN ORCHARD, MASS.



... and they said, "She'll never turn a wheel"

Skeptics of the early 19th Century made one notably poor prophecy. "She"—the Clermont—did turn a wheel. And in short time, thousands of people were traveling in comfort by steamboat.

One of the reasons for the rapid success of important inventions such as the steamboat is that they were designed and engineered from the start for a single purpose—to do a better job.

Transite Pressure Pipe is a more recent example of the same sound principle. It too was designed and engineered from the very start for a single purpose—to do a better job.

J-M engineers combined asbestos and cement by a special process, produced a material which they called Transite. Transite Pressure Pipe is strong, rustproof, resists even the most corrosive soils . . . has a high-flow capacity which can never be reduced by tuberculation.

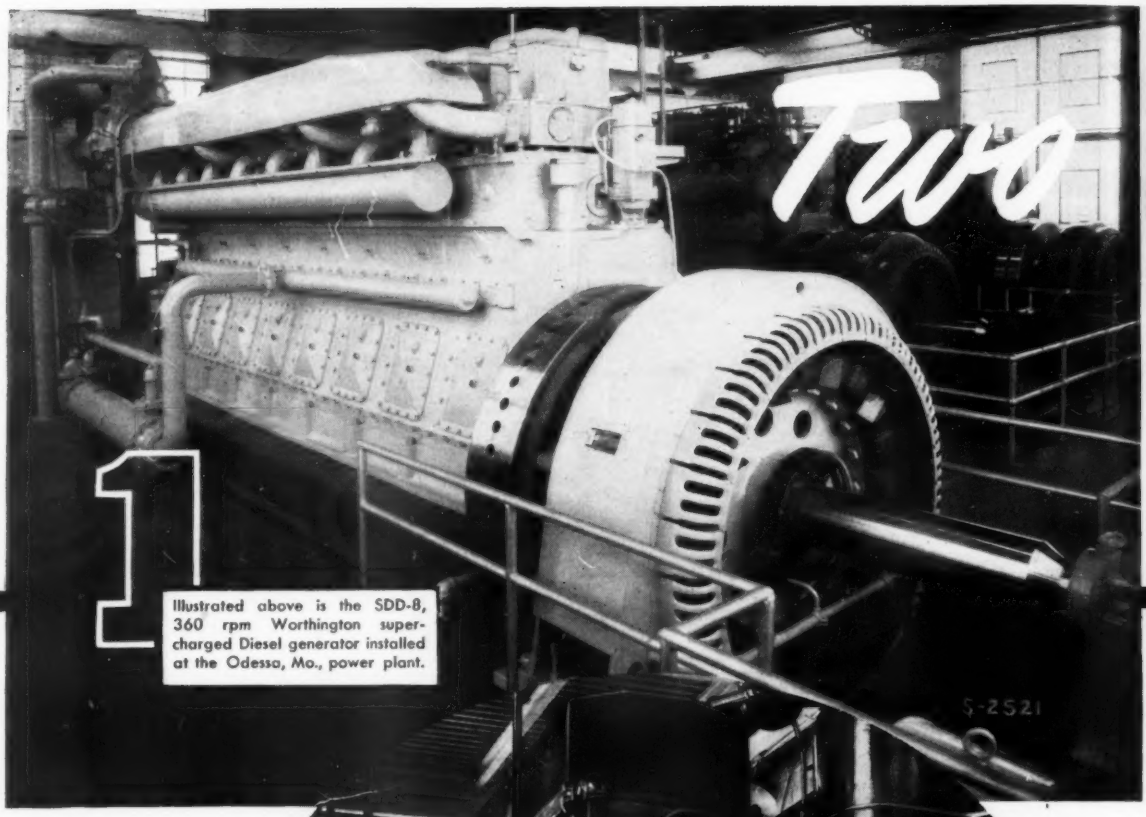
Then a coupling made of Transite was designed and named the Simplex Coupling. Simple and effective, it consists only of a Transite sleeve and two rubber rings tightly compressed into position between sleeve and pipe. This construction guards against leakage and also provides flexibility at each joint. The flexibility helps to cushion the entire line against shock and soil stresses, permits a deflection up to 5 degrees at each joint.

In short, the same kind of engineering foresight and planning that produced the steamboat, the automobile . . . and similar developments which have contributed to industrial progress . . . has been applied to the field of water transportation.

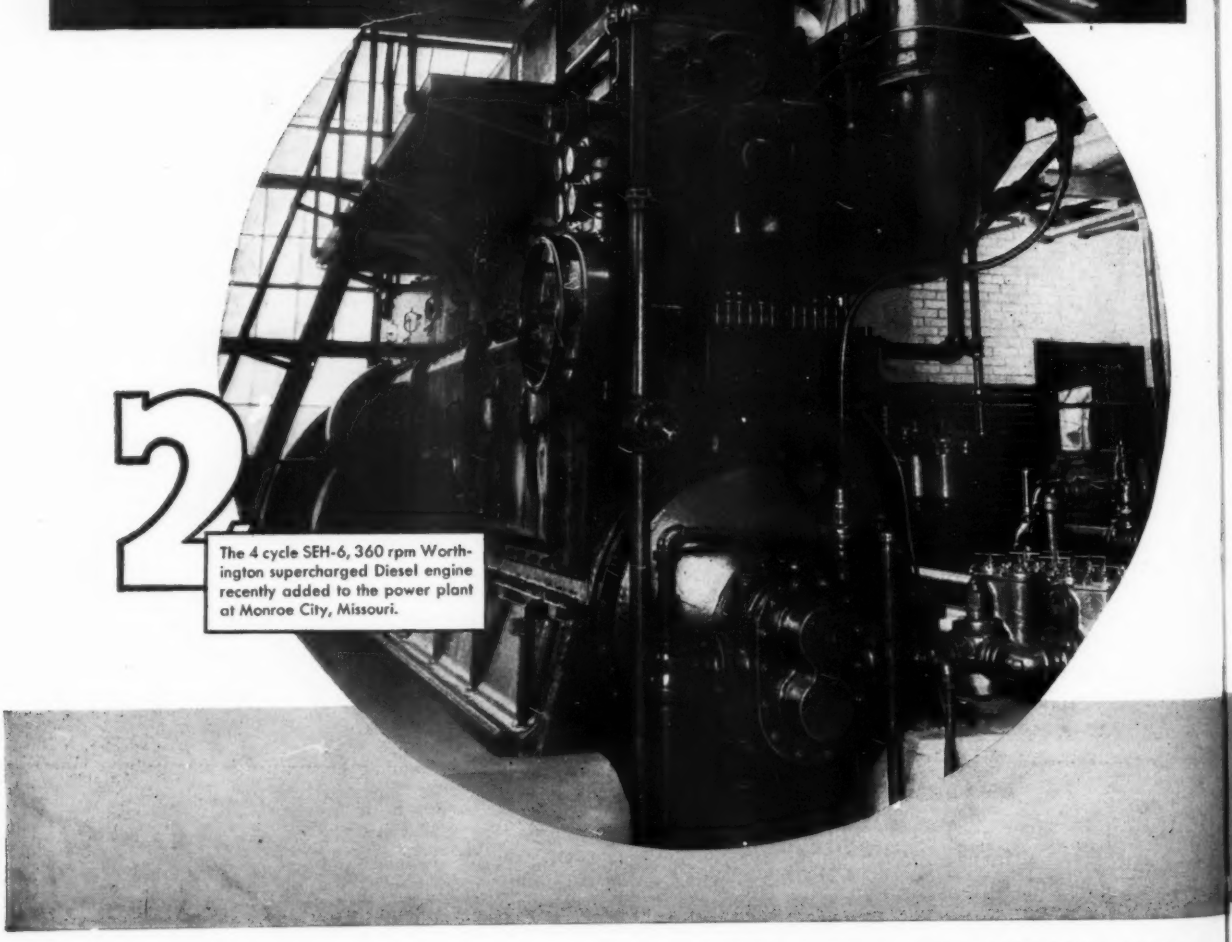
Transite Pressure Pipe was designed and engineered from the start for one single purpose—to carry water more efficiently.

For all the facts about Transite Pressure Pipe, write Johns-Manville, Box 290, New York 16, New York. Ask for Brochure TR-11A.

JOHNS-MANVILLE JM PRODUCTS



Illustrated above is the SDD-8, 360 rpm Worthington supercharged Diesel generator installed at the Odessa, Mo., power plant.



The 4 cycle SEH-6, 360 rpm Worthington supercharged Diesel engine recently added to the power plant at Monroe City, Missouri.

Power Plants

PREPARED FOR TOMORROW'S GROWTH

Operating with Economy Today

In Missouri the municipalities of Monroe City and Odessa design their generating plants for *future* power demands by installing Worthington supercharged Diesel engines, today.

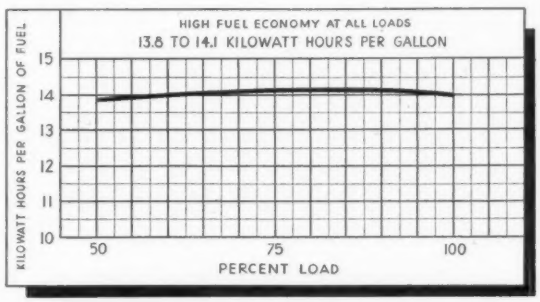
And the new Diesels . . . installed in both plants in 1946 . . . supplement other Worthington Diesels placed in Monroe City since 1935, and in Odessa since 1939.

For the investigated facts proved to these two communities that the low fuel demands of the Worthington supercharged Diesels were economically sound, even when operated at fractional capacity.

Yet, future increases in power demands are adequately provided for at the same low fuel consumptions (see chart), making the future use of these Worthington Diesels continually profitable.

So if your community seeks power that is highly economical today . . . greatly profitable in the future . . . designed for long life and easy maintenance . . . then investigate Worthington supercharged Diesel engines.

Write for more information and prove to yourself that *there's more worth in Worthington. Worthington Pump and Machinery Corporation, Engine Division, Buffalo, New York.*



This chart illustrates the Worthington Diesel's low fuel costs . . . and the very slight rise in fuel demands when changed from fractional to full power loads.

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Diesel engines, 150 to 2,640 hp . . . gas engines, 175 to 2,470 hp . . . dual fuel engines, 225 to 2,470 hp.

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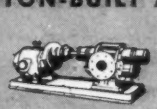

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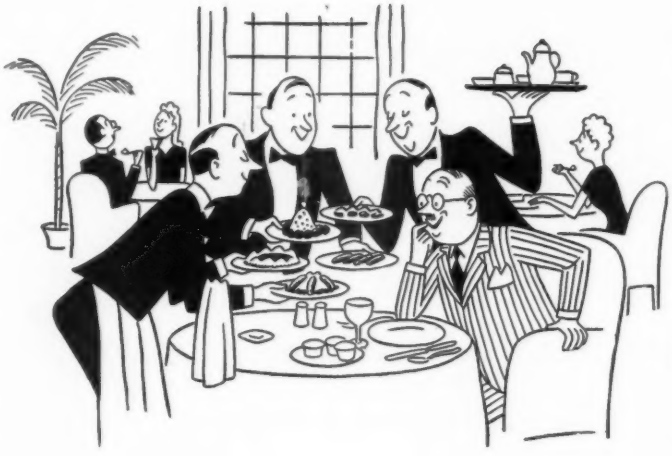

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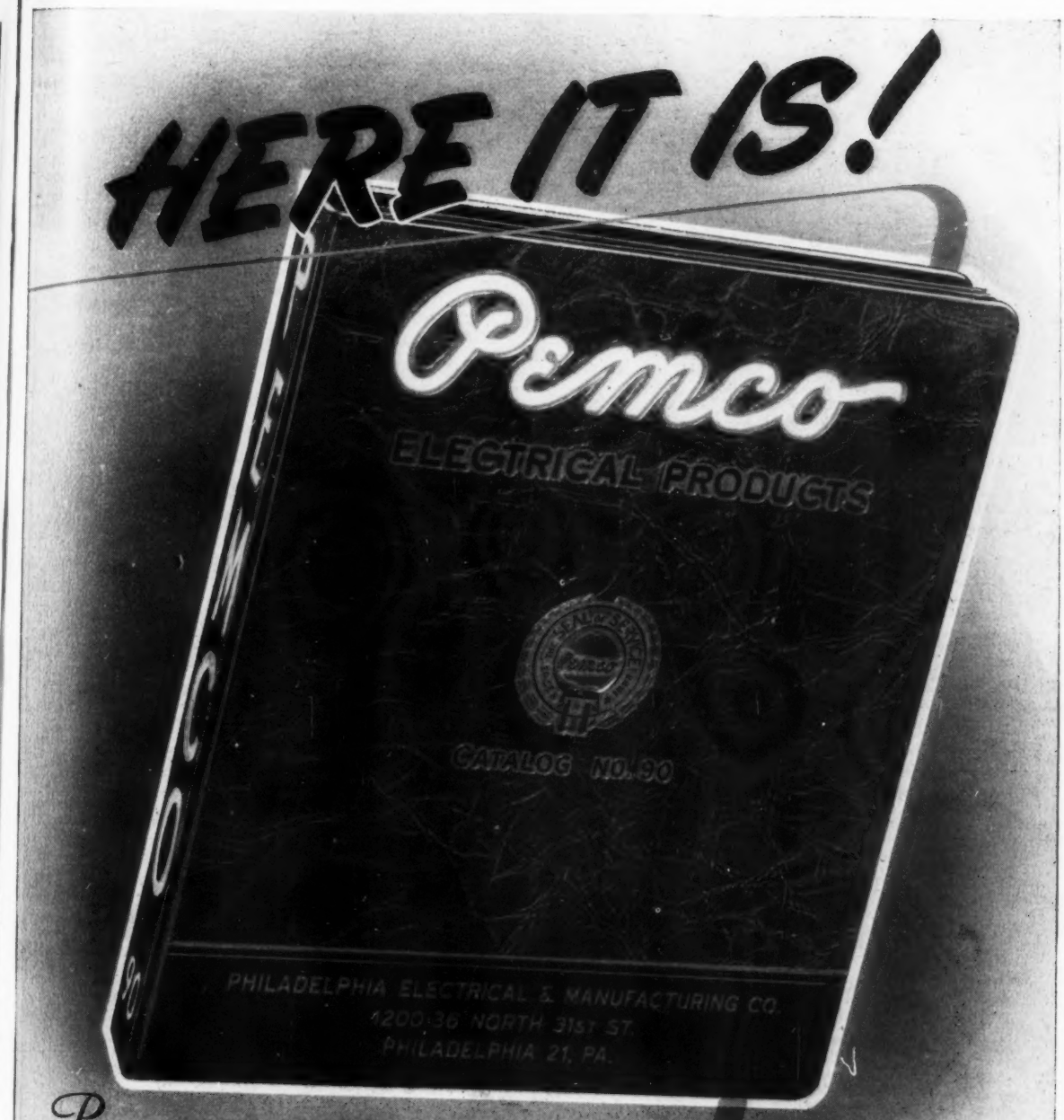

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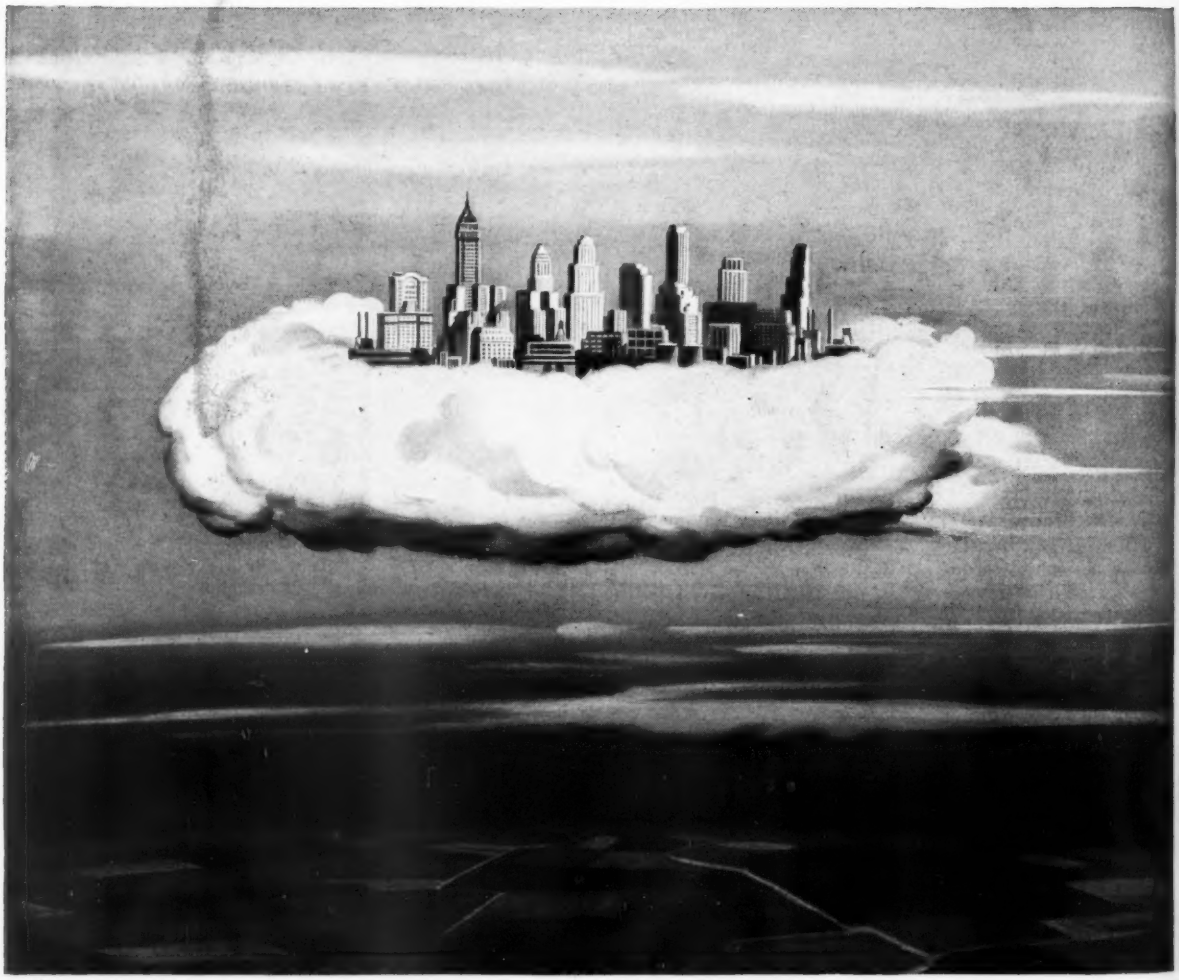

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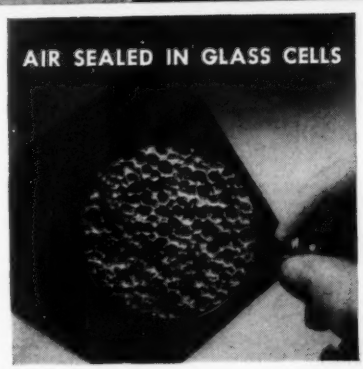

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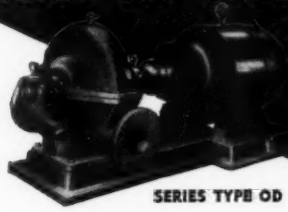

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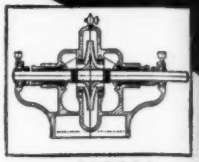
The ultimate in design and perfection — type OD pumps — in capacities to 4,000 G.P.M. and heads to 300 ft. — are accessible, compact and lasting. They are widely used for general water supply, for municipalities, industrial buildings and institutions. Also for handling condenser circulating water, liquids in paper mills and distilleries, chemical solutions, oil in oil fields and refineries, irrigation, etc.



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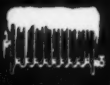
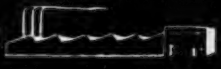
Your City, Too,

Can profit by snow- and ice-free streets!

Icy pavements and snow-filled streets hamper business, cause accidents to pedestrians and vehicles, endanger lives of school children. Continuous storms create fuel shortages,  cut vital public services. Yet many cities now enjoy snow-and ice-free streets thanks to STERLING *"Auger-Action"* Rock Salt. It removes snow and ice, saves lives and property... keeps business and industry humming  and time, labor and money are saved with clean quick-acting STERLING Rock Salt. *ORDER NOW!* In carloads - bulk or 100 lb bags. A trained representative will gladly call. *Write Today!*

International Salt Company, Inc. Scranton, Pa.

STERLING
Auger-Action
ROCK SALT

You, too, will win popular acclaim!

(Like Mayor Botts)

Troubles haunted Mayor Botts. Like most public servants, he couldn't seem to please everybody. But in nearby Centerville, he heard the people were very pleased about something. So Botts approached his rival, the mayor of Centerville. . .

BOTTS: What have you been doing to win this unusual public favor?

RIVAL: (proudly) We brought soft water to Centerville—it's wonderful!

BOTTS: (amazed) What, contented constituents from soft water? I've got to see that!

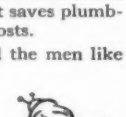
RIVAL: (taking Botts' arm) Come on—I'll prove it.

MRS. S: (over the weekly wash) Soft water? See for yourself—look at my whiter, cleaner clothes . . . and it saves soap, lots of soap!

BOTTS: (to himself) The women must love it!

MR. S: (from bathtub) Ah, yes . . . bathing and shaving are almost fun with soft water. And it saves plumbing repairs and fuel costs.

BOTTS: (to rival) And the men like it too.

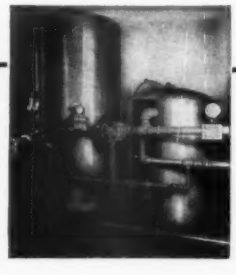


GRANDMA S: (washing dishes) See how these dishes sparkle. That's because there are no greasy soap curds.

BOTTS: (shouting) Sensational!!!

At last, Mayor Botts learned to please everybody—a Refinite municipal soft water plant, of course! What happened? Well, the Council caught his enthusiasm and voted soft water unanimously. Everyone is pleased with Botts.

Write for information on soft water for your town.



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PERMA - GLOW The number that glows in the dark.

PLASTIC BRONZE To match brass and bronze hardware.

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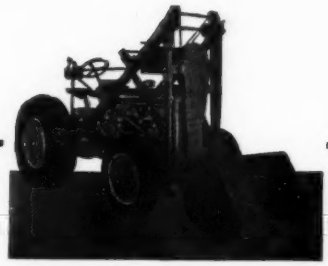

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for Industrial Tractors

Elkhart White Mfg. Co. Indiana

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Emergency Pipe Clamp—the universal repair clamp the world over, for nearly half a century! Easy to apply. Saves cost of new pipe—eliminates job of tearing out old and putting in new.

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The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms and Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

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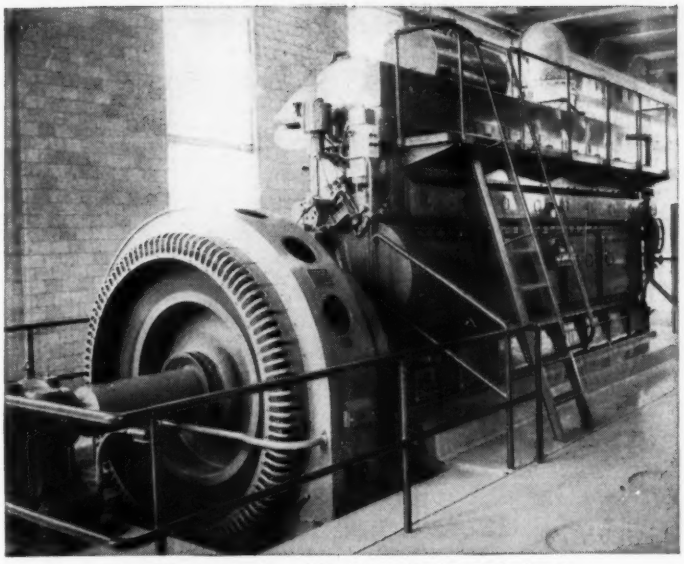


Type SEHGO-8 supercharged Worthington Dual-Fuel Diesel engine.

Supercharged Dual-Fuel Diesel Goes Into Service— Over 36% Thermal Efficiency

What can be accomplished by supercharging a dual-fuel Diesel has been demonstrated by the performance of the new Worthington engine in the municipal power plant at Lamar, Colo.

This 1530 hp engine, recently installed to drive a 1080 kw generator, has turned in a record of over 36% thermal efficiency—7050 net btu per brake horsepower hour (total of gas and pilot oil fuels) at full load. Elevation is 3600 ft.

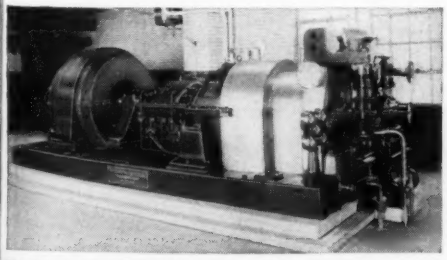
Worthington achievements in producing the first U. S.-built 4-cycle dual-fuel engine and the world's first supercharged engine of this type were among the reasons why Lamar selected Worthington equipment, to take care of its greatly increased demand.

The Worthington engine at Lamar uses natural gas on the Diesel cycle, but in case of gas line failure, it is quickly convertible (by a turn of a wheel) to Diesel oil or any mixture of gas and oil. With gas, the fuel cost is slightly more than one mill per kw.

The supercharger utilizes the energy of the engine exhaust to drive a blower which supercharges the engine. In addition to increasing horsepower about 50%, this improves mechanical efficiency and scavenging, resulting in lower fuel consumption. Lubricating oil requirements are also reduced. Further economies result from the lower installation cost: less building space, smaller foundations, etc.

Activity in the Lamar territory has increased so much in the past six years that the power plant has been hard pressed to keep its customers supplied. Construction of a new dam a few years ago doubled the load, and the expansion of the local milling industry further increased the load so that Lamar needs, today, three times the power it used in 1940 (and 18 times the power used in 1921).

The new generating unit is being used for peak loads and standby services.



Worthington 500 KW turbine at New York's Dept. of Sanitation Incinerator Plant on 56th Street.

The Incinerator on 56th Street

New York City maintains an incinerator plant on 56th Street. This plant uses the heat generated in burning refuse to make power for operating cranes, lights, plant auxiliaries.

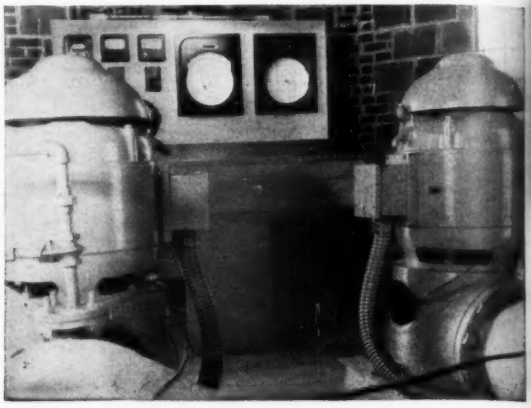
Two Worthington 500 KW alternating current geared turbine-generator units supply the power. They were installed in 1936. They operate on steam at 200 lbs. pressure supplied from the waste heat boiler and exhaust at 5 lb. back pressure.

NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON

Worthington Helps Ranney System at American Cyanamid



Two Worthington turbine pumps in American Cyanamid Company pump house.

American Cyanamid Company's new plant in Wallingford, Conn., is located on sandy flats.

One of the principal problems was to find a suitable source of process water. The plant being located in a valley, it was presumed that enough ground water would be available. But after six wells had been placed in operation, it was found that the geological formation was such that the water supply dwindled, leaving no reserve for plant expansion.

A survey of subterranean water sources was made by an experienced geologist who disclosed that a valuable aquifer existed on the property. One of the latest types of water collecting system, designed by the Ranney Water Collector Corporation, was installed.

Worthington In the Pumping Station

The system works this way. 1, A large area of water-bearing formation is exposed to horizontal screen pipes located below the ground water table. 2, Selective removal of the fine material from the aquifer in the vicinity of the screens and the formation of more permeable ground or a gravel pack adjacent to the screen produce a series of radiating drainage canals emptying into a central shaft. 3, The lines lead to portholes in the lower section of a concrete cylinder, sealed at the bottom.

This compact unit is capable of producing, for American Cyanamid Company, 5 million gpd. The water is colorless, odorless, tasteless and bacteria-free due to the large infiltration area and the 80-ft depth of sand and gravel through which it travels to the pipes.

Two Worthington turbine pumps were selected for the pumping station. Each has a capacity of 100 gpm. The flexibility provided by the Worthington design is ideal because added capacity can be obtained from each pump at moderate additional cost.

Water from the caisson bottom is pumped to a tank above ground to feed two Worthington centrifugal Monobloc pressure pumps supplying the plant pressure system.

Operation of the water system is entirely automatic. The well pumps are controlled by the water level through contact electrodes in the above-ground supply tank, and the pressure system is controlled by live pressure.

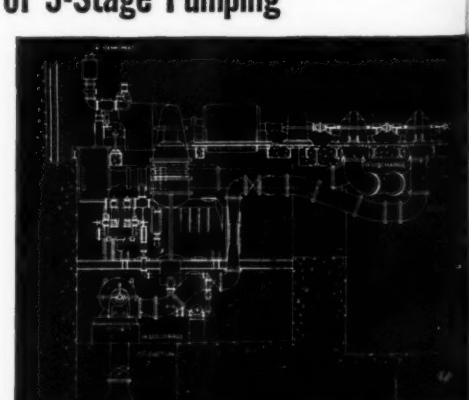
Unusual Design of 3-Stage Pumping

Back in 1928, the South Pittsburgh Water Company installed an unusual Worthington pumping unit for 12 mgd against 370 ft TDH at 1140 rpm. Its success led to installation of a second unit in 1933 for 13 mgd against 370 ft TDH at 1140 rpm. (A third unit for similar service is now under construction.)

These pumping units are really "three stage". The first stage units are 18 in. Worthington motor-driven pumps located in the basement within reach of the water in suction wells. Power for first stage pump motors is furnished from generators on the main floor, forming a part of the pumping units.

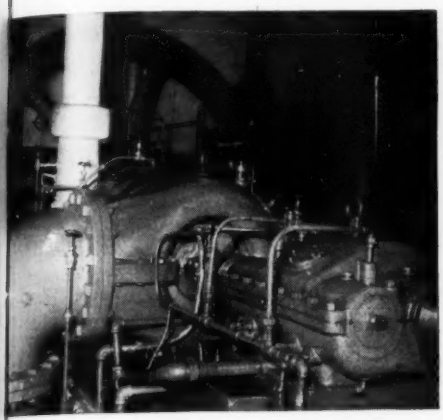
The two main pumping units are on the engine room floor. They each consist of steam turbines direct-connected to generators and two 18 in. Worthington pumps in series.

Power developed by the generators is also used for motor-driven pumps at another station.



15 mgd Worthington Centrifugal pumping unit and 2,000 kw gene... South Pittsburgh Water Company

Worthington Pump and Machinery Corporation
•
Harrison, N. J.



hington-Moore Steam Turbine driving two centrifugal ps. Old Worthington steam engine shown in background.

More Power from Smaller Packages Experienced at Canoe Brook

The extent of engineering progress in pumping station equipment is dramatically illustrated by installations of Worthington equipment at the Commonwealth Water Company's Canoe Brook Pumping Station in Summit, New Jersey. This company, an affiliate of the American Water Works and Electric Company Inc., supplies water to the municipalities and 13 communities in that part of New Jersey, and the Canoe Brook Station is one of three pumping stations.

One of the biggest pieces of equipment is a Worthington compound crosshead steam engine and displacement pump installed in 1924. It has a daily capacity of 6,000,000 gallons and is still performing with complete satisfaction. It takes up 50 ft by 25 ft and the flywheel alone weighs 75 tons.

By comparison, the Worthington-Moore turbine recently installed to drive two centrifugal pumps with a total capacity of 5,000,000 gpd, requires much less floor space—the total equipment occupies less than one-tenth the space, but has five-sixths the capacity of the older engine and pump.

Improved simplicity is demonstrated by the turbine combination in which all valves and linkages have been eliminated. With the exception of the gear box, all of the elements contain only one moving part.

Ransome Blue Brute 34E Dual Drum Paver discharging into a batch hopper.

World's Record on Dual Drum Pavers

The ten Ransome Blue Brute Dual Drum Pavers owned by S. A. Healy Company of Chicago give this company what is believed to be the largest number of same-make dual drum pavers owned by a single company.

But none of those machines has ever been used as a paver!

Like the Ransome high-elevated-boom pavers used by the U. S. Government at the Grand Coulee Dam and by many private contractors for building construction work, these machines actually serve as mobile mixing plants.

The combination of fast hydraulically-controlled boom swing and hydraulically-controlled discharge bucket makes it possible to concrete isolated bridge piles and thin walls or to load trucks, batch hoppers, etc., without the dangerous working hazard of a man on top of the form or hopper.

The design gives a clearance of 20 ft. from bucket to ground at the outer end of the boom. The bucket has a self-leveling device and an automatic lock. If the bucket cable should break, the automatic lock holds the loaded bucket at any position on the boom, thus preventing the bucket from running down the boom and crashing into the mixer.

These Blue Brute machines are being used on such jobs as the Chicago Subway system, the Union Stock Yards sewers and the Neversink Dam at Luzon, N. Y.

57-Year-Old Pump Makes "Good Buy"

Worthington Pittsburgh office was recently asked to look up the records of a certain 12x7x10 duplex, piston-pattern, direct-acting pump. The inquirer said this pump was in excellent condition and that he could buy it for $450.00.

A search of the records revealed that that particular pump had been built in 1890!

7-12

XUM

● Morris 8" Electric-driven Dredge used for cleaning out reservoirs. Note compact design, sturdy proportions and neat appearances. Handles material at a total cost of less than 10 cents per cubic yard.

MORRIS *Hydraulic Dredge*

DIGS AND TRANSPORTS Material in a Single Operation!

Whatever your municipal needs—cleaning out reservoirs, improving shore lines, improving parks, lakes, or land—the Morris Hydraulic Dredge will handle materials more economically and efficiently than any other type dredge.

● The Morris Hydraulic Dredge excavates silt, sand, clay, gravel and almost any material short of hard solid rock from a maximum depth of about 100 feet below the water surface.

● Digs and transports material in a single operation to the point of use or disposal.

● Delivers dredged material through a mile or more of pipe line, depending on design of dredge.

● The position of both the dredge and its discharge pipe line can be easily changed for flexible operation . . . in choosing and changing the site of excavation or the disposal site of the excavated material.

MORRIS will design and build a Dredge to Meet Any Dredging Requirements

For more than 80 years, Morris Engineers have been building dredges for every kind of dredging operation. Dredges vary in size from 6" to 30" . . . are powered by electric motor, Diesel engine or steam . . . fitted with various types of agitators such as cutters, jet heads or plain suction nozzles . . . and always built to serve with maximum efficiency at minimum initial and operating cost. *Write us today for a free copy of Bulletin 177 . . . or ask for information concerning your specific requirements.*

MORRIS MACHINE WORKS
Baldwinsville, New York
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

Save...

Time, Money and Labor in making pipe joints

« « « The only field equipment necessary to make a Universal Cast Iron Pipe Bolted Joint is a Ratchet Wrench.

by using

UNIVERSAL
CAST IRON PIPE

(PIPE and JOINT are ONE)

Outstanding Advantages:

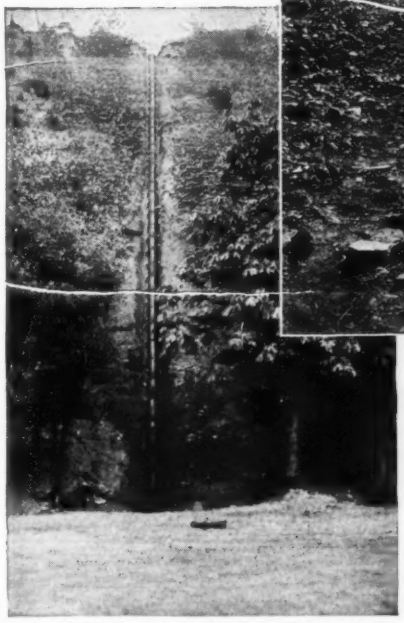
1. *No calking or pouring of lead or lead substitutes. No gaskets used.*
2. No bell holes to dig. Can be laid in a narrow trench. Cost of wide trenching is eliminated.
3. *Can be laid with SPEED. Easier and cheaper to install because only two bolts need to be inserted in the lugs, tightened with a ratchet wrench (the only tool needed), and the completed joint is made in a few minutes. Experienced workmen are not needed.*
4. Nothing to deteriorate; nothing to work loose; no leakage; no maintenance cost.
5. Flexibility: Universal pipe is very flexible. It withstands expansion, contraction, unequal settlement, vibration and shock, and electrolysis. Many curves are laid with straight lengths and do not need special fittings.
6. *Universal pipe can be laid on rocky soil, under water and in sub-zero weather.*

Specify UNIVERSAL PIPE for water mains and sewers

Furnished in hot tar dipped, cement lined, and enameline lining.

Quick service to customers: By rail, truck or water from our foundries and warehouses located from coast to coast.

THE CENTRAL FOUNDRY CO.
386 FOURTH AVENUE, NEW YORK 16



Above *All straight lengths of Universal pipe in this curve.*

At left *16" pipe laid on a 45-degree slope. Note deflection at top to level ground without fittings.*

USE THE COUPON

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THE CENTRAL FOUNDRY COMPANY
386 Fourth Avenue, New York 16, N. Y.

I am interested in SAVING LABOR, TIME, MONEY and EQUIPMENT in pipe-laying. Send me the UNIVERSAL catalog.

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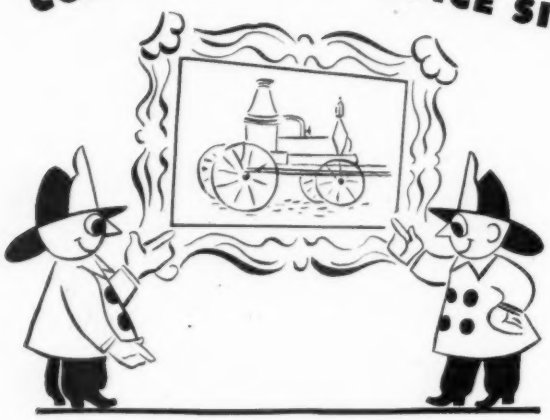
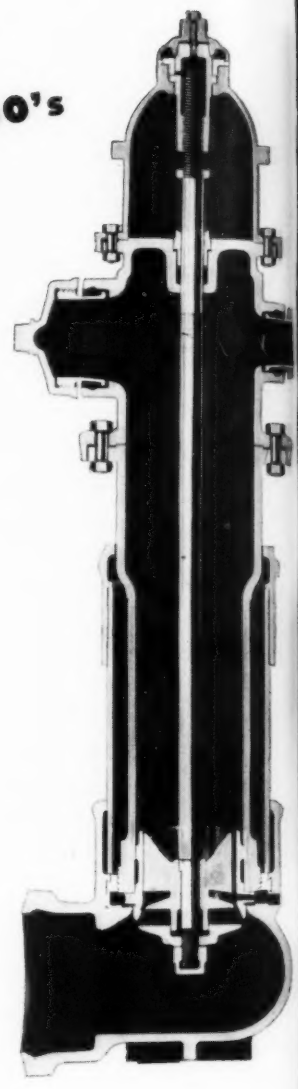
CONTINUOUS SERVICE SINCE THE 1800's





Thousands of Mathews Hydrants have been in continuous service for three quarters of a century. It's the way they're built.

Take the valve assembly, for example. The drain valve, positive and automatic, is an integral part of the guide and the upper main-valve plate. Keyed to the hydrant stem, it moves vertically with the main valve. As the main valve opens, the drain valve closes the orifice, and vice versa. The main valve, true compression type, opens *against,* and closes *with,* the pressure; there is no strain, no leakage—even if the hydrant should be broken in traffic. The assembly being cone-shaped, the water can be turned on or off gradually—no water hammer, minimum friction, minimum deposit of sediment on the valve seat.

Mathews have long been the leading hydrant the world over. Insist that your community have the extra protection of this famous make.

OTHER FEATURES OF MATHEWS LEADERSHIP

Head can be rotated a full circle, on swivel flange • Replaceable head permits change in nozzle outlets • Nozzle levels can be raised or lowered without excavating • Barrel screws into bronze bushing in elbow • Operating thread (easily accessible) is only part that needs oiling • Stuffing box plate cast integral with the nozzle • Shield operating nut keeps out dust, rain, sleet • Maintenance and repair expense kept to the minimum.

MATHEWS HYDRANTS

Made by **R. D. WOOD COMPANY**

PUBLIC LEDGER BUILDING, INDEPENDENCE SQUARE, PHILADELPHIA 5, PA.

MANUFACTURERS OF "SAND-SPUN" PIPE (CENTRIFUGALLY CAST IN SAND MOLDS) AND R. D. WOOD GATE VALVES

The beginning and growth of every town and city depended upon the availability of a dependable water supply. In early days, settlements were necessarily located in the vicinity of surface water, such as rivers, lakes or springs. As the population increased and rapidly spread throughout the country, communities were formed in locations necessarily removed from such surface sources of water. This required that underground water supplies be developed by means of wells and pumping machinery. The intensive growth of the communities into large towns and cities led to the necessity for a dependable and economical water supply and made constantly increasing demands on pumping equipment.

Wintroath pumps, because of their leadership in mechanical and hydraulic improvements, together with high quality workmanship standards, have gained wide popularity in the field of municipal water supply.

Some of the communities using Wintroath pumps are:

California Cities: Los Angeles, Pasadena, Alhambra, Burbank, Long Beach, Lynwood, Altadena, Whittier, Monrovia, Bakersfield, Chowchilla, Tulare, and many other communities served by the Southern California Water Company and California Water Service Company. City of Covington, Oklahoma; City of Artesia, New Mexico; City of Canton, Ohio; City of Guelph, Canada; Tribune, Kansas; Westcliff, Colo.; City of Clovis, New Mexico; City of Weatherford, Texas; Garden City, Kansas.

WINTROATH PUMPS, INC.

1100 South Meridian Ave. Alhambra, California

"Wherever Water Needs a Lift"

A STUDY of "Survival and Retirement Experience With Water Works Facilities" in 25 cities has recently been completed. The facilities studied included cast iron distribution mains.

The 25 cities, with a total population of nearly 7 million, have installed more than 55 million feet of cast iron mains. The first of these mains was laid in 1817.

A report recently published by the American Water Works Association* includes individual tables for each city showing in detail the amount of cast iron pipe laid by sizes, the amount still in service, and the year of the first installation.

A combined tabulation of the 25 tables reveals a remarkable experience with cast iron distribution mains. In these 25 cities, more than 96 per cent of all cast iron mains in sizes 6 inch and over, that have ever been laid are still in service.

With the permission of the A.W.W.A. we have reprinted the facts as they apply to cast iron pipe in a brochure "Survival and Retirement Experience With Cast Iron Water Mains." If you have not received a copy, write us. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, Peoples Gas Bldg., Chicago 3, Illinois.

*Available from American Water Works Association, 500 Fifth Ave., New York.

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SERVES FOR CENTURIES

LOOK FOR THIS MARK IT IDENTIFIES CAST IRON PIPE

Long-Term Assets to the Modern Waterworks System . . . . .

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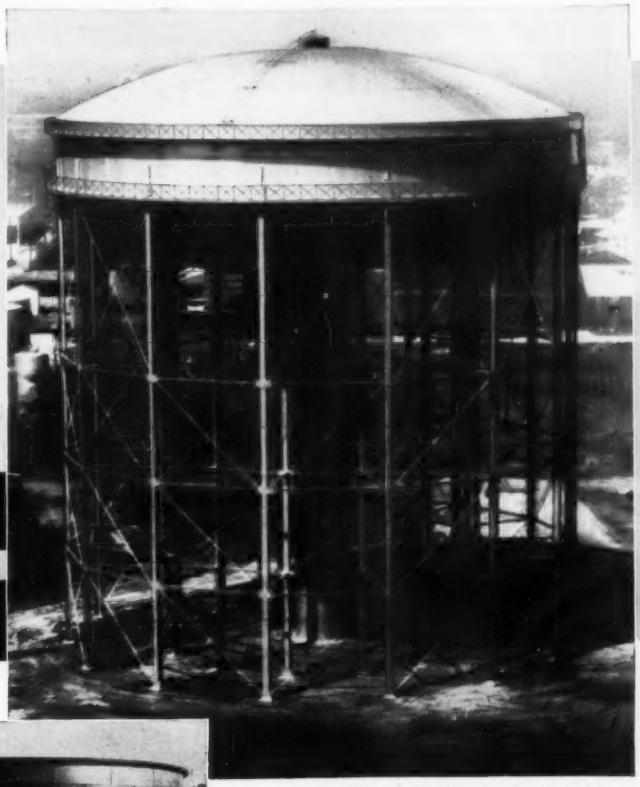
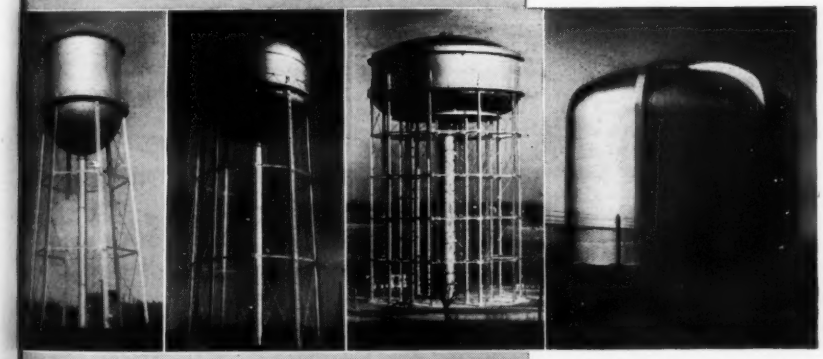
ELEVATED STEEL TANKS

and STEEL RESERVOIRS



1,500,000 gal. toroidal bottom tank; structural tower. Diameter 103'4", head range 25'; height to bottom 85'. Fort Dodge, Iowa.

Two 3,000,000 gal. steel reservoirs, diameter 144', height 25'. Berryville, Va.



...000 gal. cone ...of, hemispherical ...tom tank, 118' to ... Stillwater, Okla.

500,000 gal. double ellipsoidal tank, on 100' tower. Mission, Texas.

1,000,000 gal. toroidal bottom tank; diameter 76'9", height 127', head range 30'. Keokuk, Iowa.

2,200,000 gal. steel reservoir; ellipsoidal roof; ornamental pilasters. Diameter 80', height 51'. Midland, Tex.

The choice of elevated steel tank or steel reservoir depends largely upon local land elevations. The choice of PITTSBURGH-DES MOINES as designers, fabricators and erectors of your required units is equally logical: you benefit by a half-century of experience in this type of construction, and a guarantee of complete satisfaction with each installation. *May we consult on your water storage needs?*

A NEW PITTSBURGH · DES MOINES STEEL FABRICATING PLANT at SANTA CLARA, CALIFORNIA

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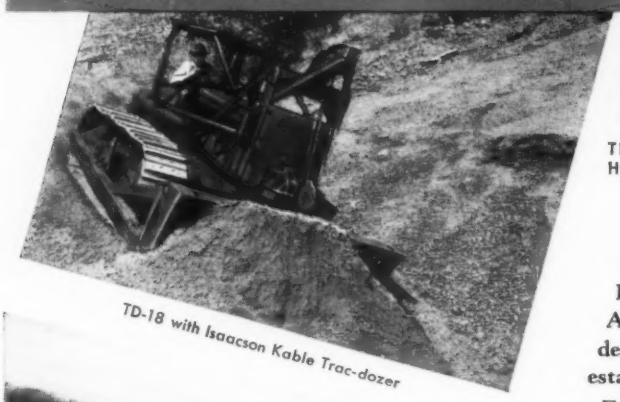
When Tractor and Equipment are ONE Machine

It's an INTERNATIONAL with Matched Equipment

TD-18 with Bucyrus-Erie Hydraulic Bullgrader



TD-18 with Isaacson Kable Trac-dozer

TD-18 with Bucyrus-Erie Cable Bullgrader

TD-14 with Isaacson Hydraulic Trac-dozer

TD-14 with Heil Trailbuilder

When you buy an International Crawler and matched bulldozer from your International Industrial Power Distributor you get a completely integrated machine. All the equipment shown in the photographs has been designed by its manufacturer to meet the requirements established by International engineers.

Each bulldozer provides the benefits of its maker's long experience in building earth-moving equipment plus the features that make it an integral part of the International tractor for which it was built.

This means that your International Crawler and equipment becomes *ONE efficient machine* for economical, profitable work.

You cannot find a better buy. It's the perfect combination of specialized power and specialized equipment.

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CRAWLER AND WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

NEW

LOW COST—NOISE FREE 2-WAY RADIOTELEPHONE FOR URBAN AREAS

Motorola FM DISPATCHER

WITH P.S. "PRECISION" SELECTIVITY

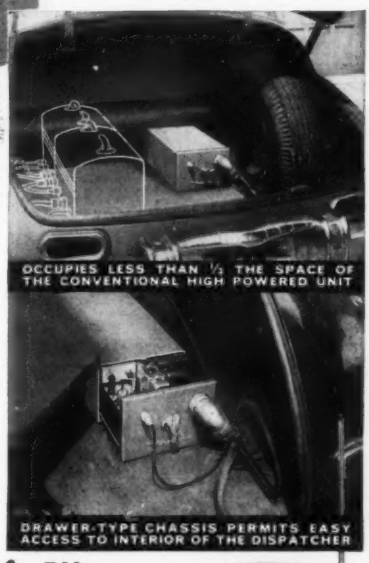
$397.50 COMPLETE *plus tax*

The DISPATCHER-Another FIRST for *Motorola*

The Motorola DISPATCHER is a compact, single-unit mobile radiotelephone transmitter and receiver specifically designed for use in noisy urban areas. Easy to install and maintain, with exceptionally low battery drain and highest sensitivity, the Motorola DISPATCHER is the FIRST radiotelephone unit especially and effectively designed for urban communications. The DISPATCHER comes to you as a tried and proved communications tool—after two years of design and field performance testing. It's a Motorola masterpiece!

P. S. . . "Precision" Selectivity

Now your conversations can be conducted without interference from other radiotelephones, ignition noise, sparking trolley contacts or any other electrical noises radiated in urban areas. P.S. does it—"PRECISION" SELECTIVITY—the sensational Motorola development that gives you the absolute maximum of protection against off-channel interference of *all types.*


OCCUPIES LESS THAN ½ THE SPACE OF THE CONVENTIONAL HIGH POWERED UNIT
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The *Motorola* FM HANDIE-TALKIE IS HERE!

Now you can have instant, constant communications wherever a man can go. Smaller than a brief case, easily carried in the hand, the Motorola FM HANDIE TALKIE is the eagerly awaited answer to hundreds of communications problems. *Send for descriptive booklet.*

Motorola Inc.

COMMUNICATIONS AND ELECTRONICS DIVISION

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Water over the Dam . . .

controlled by LUDLOW!

IMMEDIATE SHIPMENT!

HUB END VALVES

DOUBLE GATE— A.W.W.A. Specifications 2 in. to 12 in.

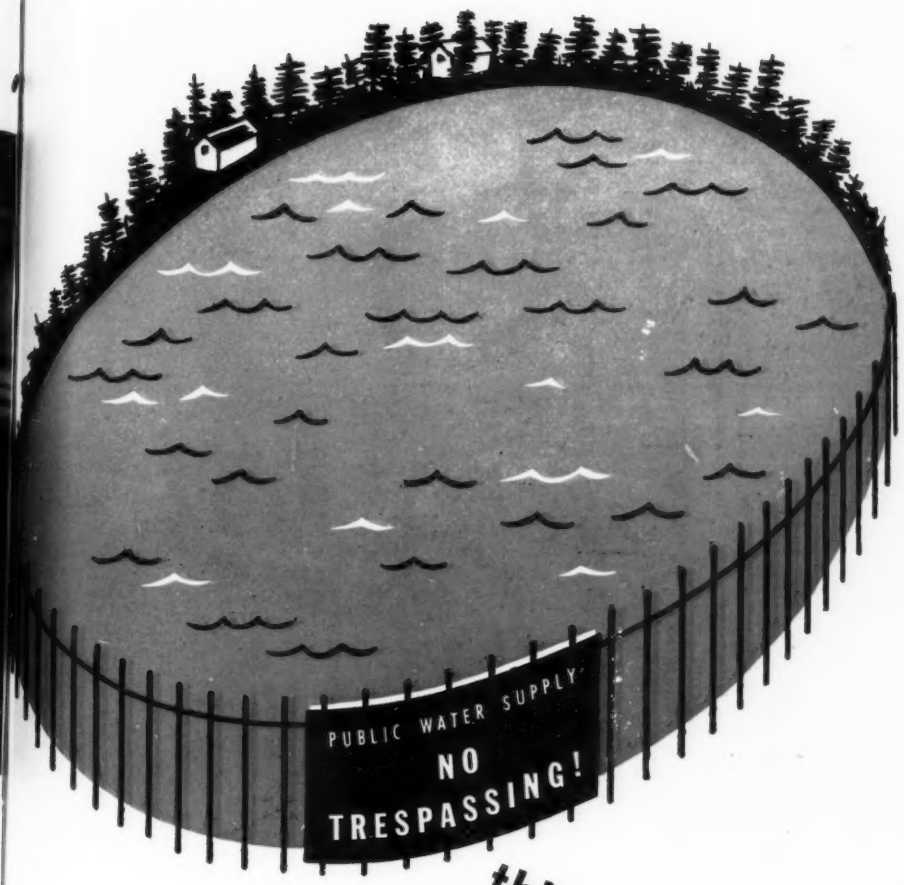
Also Normal Delivery on Valves in Larger Sizes and *rapid delivery* on Hydrants.

This interior view of the Waterbury Control Station at Morris, Connecticut, shows one part of the battery of LUDLOW Double Disc Gate Valves that regulates Morris Dam and Wigwam Reservoir. Familiar stand-bys, they provide the smooth, accurate control that has marked LUDLOW performance since 1866 — a fact well appreciated by thousands of other communities in all parts of the country.

LUDLOW engineers will be glad to talk with you about your plans for replacements or new installations. There's no obligation.

V-71

The LUDLOW VALVE MFG·CO·INC·TROY·N·Y· SINCE 1866



this keeps out humans,

but... it won't keep out algae, phenols and other contaminants. Such pollution in your raw water causes tastes and odors— now successfully removed with Mathieson's Chlorine Dioxide.

Treatment with Chlorine Dioxide destroys algae and other organic matter . . . oxidizes phenols and other troublesome compounds . . . attacks bacteria as well. Tastes and odors are eliminated. Your community is served with water that is *good to drink.*

Municipalities the country over are standardizing on the new Mathieson Chlorine Dioxide technique. Write us for details. THE MATHIESON ALKALI WORKS (Inc.), 60 East 42nd Street, New York 17, N. Y.

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CHLORINE DIOXIDE

Chlorine Dioxide . . . Sanitation HTH . . . Liquid Chlorine . . . PH-Plus (Fused Alkali) . . . Caustic Soda Soda Ash . . . Bicarbonate of Soda . . . Ammonia, Anhydrous & Aqua . . . Carbonic Gas . . . Dry Ice Sodium Chlorite Products . . . Sodium Methylate

. . for Superior Diesel Engine Buyers

● Behind the alert, surging power of Superior Diesel Engines is a long standing reputation for economy. To earn that recognition . . . to build it . . . to hold it . . . has demanded parts of the finest material, built to extreme accuracy.

Replaceable cylinder liners offer factual evidence of the careful manufacturing practices that mark every Superior Diesel Engine. This vital part is made in Superior's own foundry of a special, close grained semi-steel analysis. They are machined all over to insure uniform expansion and contraction. Every cylinder is bored to the same close tolerances. The results are a uniform accurate piston fit which assures a quiet running engine and long piston and liner life.

Because all cylinder liners are interchangeable and simple to remove they can be replaced with ease. Consequently, if only one cylinder needs repair, the entire block does not have to be replaced. This provides substantial operating and maintenance economies.

Cylinder liners are just one of the features that have helped to build Superior's reputation for quality and economy. There are many others. One of our representatives will be glad to call and describe them in detail.

Superior DIESEL

SUPERIOR ENGINE DIVISION OF
THE NATIONAL SUPPLY COMPANY
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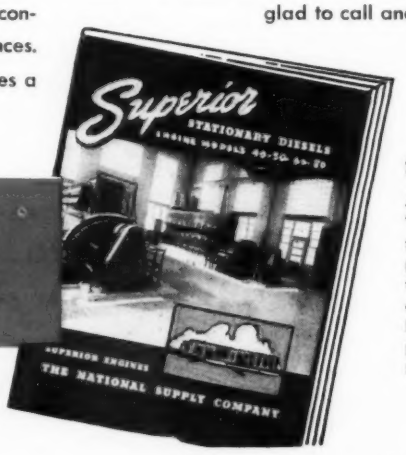

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A new 28 page booklet, "Superior Stationary Diesel Engines" is just off the press. It's packed with facts that tell *how, when and why* Superior Diesel Engines can help you build profits. Write for your free copy today.

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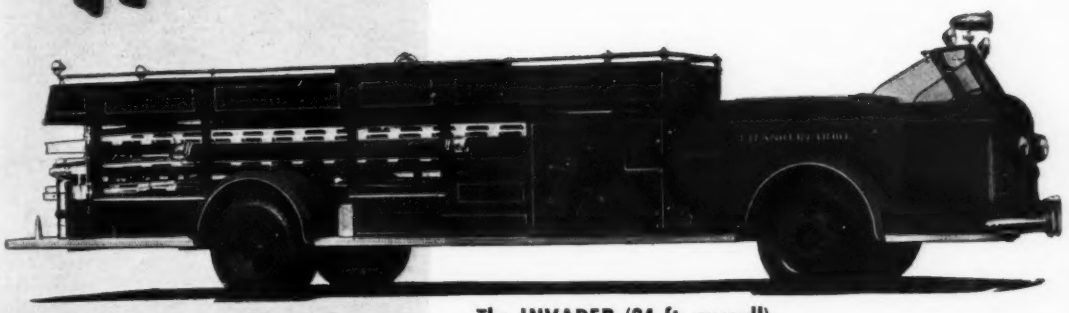


The INVADER (34 ft. overall)

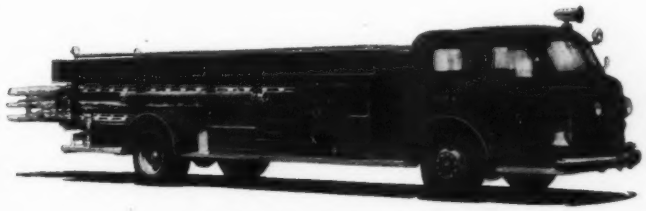
THE NEW

AMERICAN-LAFRANCE

CAB-AHEAD-OF-ENGINE

QUADRUPLE

AN efficient combination of pumper and ladder truck with outstanding pump and road performance. The short wheelbase, 220 inches, provides a maximum of maneuverability. The Cab-Ahead-of-Engine design gives a maximum of driver vision, with easy steering and proper load distribution. Available with all standard I.A.F.C. Class A rated pump capacities and a full complement of ground and roof ladders.



The SPARTAN with cab

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AMERICAN-LAFRANCE-FOAMITE CORPORATION

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TORONTO 9, ONTARIO, CANADA

Now... FINE QUALITY

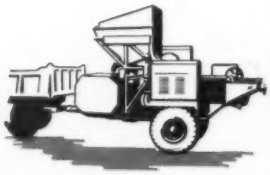
The B-G MAINTENANCE PLANT

Here is a complete, easy-to-operate *small* bituminous mixing plant. Ideal for regular road maintenance and repair, it is designed for a variety of small runs where a relatively lower capacity is required, such as paving alleys, playgrounds, driveways, parking areas, etc. It produces any standard type of bituminous mix from oil emulsion, or cutback mixtures to high-type asphalt cement mixes.

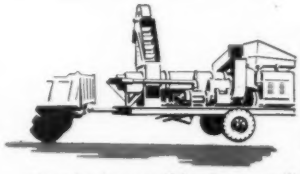
The B-G Maintenance Plant employs the basic principles of volumetric proportioning and continuous mixing proved by the large B-G Mixers.

Completely portable, the B-G Maintenance Plant is quickly and easily set up, greatly reducing the unproductive time required for changing job sites.

TWO BASIC PORTABLE UNITS



The B-G 840 Mixer:
This mixer has a capacity of 10 to 25 tons per hour, depending on the type of mix. With its continuous twin-shaft pugmill, it thoroughly mixes the bitumen and aggregate and coats the aggregate completely through its pressure mixing action. The Mixer operates on the basic B-G volumetric-continuous principle. Pneumatic-tired for easy towing.

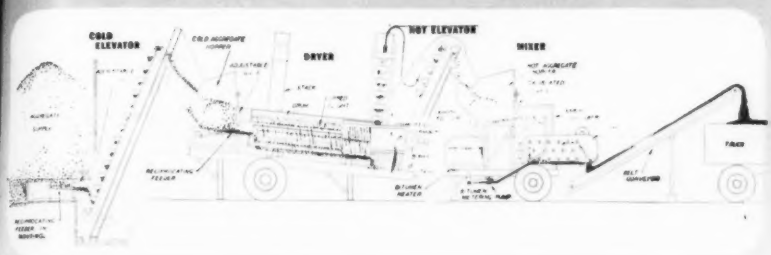


The B-G 830 Dryer:
Dry, hot aggregate is as easy to obtain with this Dryer as with larger, more elaborate plants. Assures mixes of high quality—previously impossible for small quantities, due to lack of drying facilities. The 830 Dryer has a capacity of from 10 to 20 tons of dried aggregate per hour. Pneumatic-tired for easy towing.

B G *Constant Flow Equipment*

Barber-

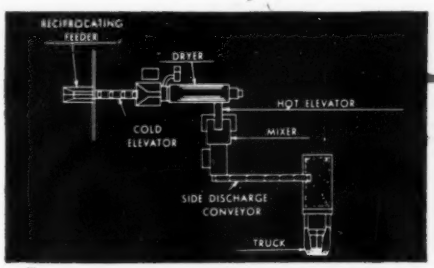
BITUMINOUS MIX



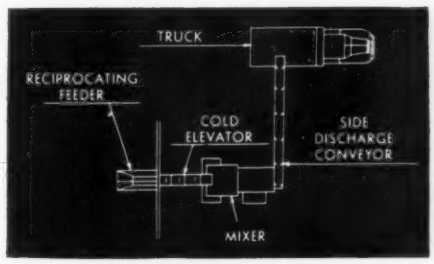
for REPAIR MAINTENANCE *and all* SMALL JOBS!

A CONSTANT FLOW UP TO 25 TONS PER HOUR

This chart shows the flow of materials through the B-G Maintenance Plant. The aggregate is fed to the Cold Elevator by a Reciprocating Feeder through adjustable gates—then to the Dryer Hopper. The material is fed evenly to the Dryer drum where it is lifted and dropped continuously through the hot gases which flow the length of the Dryer. As the moisture is removed, the mineral aggregate is heated to keep the mix workable until placed. The Hot Elevator, which elevates dried aggregate to the Mixer Hopper, is an integral part of the Dryer. In the Mixer, an apron feeder continuously and accurately measures the dried aggregate through the calibrated gate. Since the bitumen pump is of the positive displacement type, and is interlocked with the aggregate feed, the percentage of bitumen to aggregate is held constant.



FLEXIBILITY OF SETUP



WITH DRYER, *here the Reciprocating Feeder feeds one or two types of aggregate to the Cold Elevator which charges the Dryer Hopper.*

WITHOUT DRYER, *in this setup the Dual Gate Reciprocating Feeder feeds the Cold Elevator, which directly charges the Mixer Hopper.*

AUXILIARY EQUIPMENT

- **2-COMPARTMENT BIN** *for Model 812 Feeder. Has capacity for 13 tons aggregate supply, with provision for installation of Reciprocating Feeder below.*
- **DUST COLLECTOR.** *To avoid the escape of fines from the exhaust gases during the drying process.*
- **ASPHALT TRANSFER PUMP.** *Provides a means of transferring bitumen from cars, or transfer units to storage or Mixer tank.*
- **FINES FEEDER** *mounted over Mixer when additional filler is required.*

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Company Name.....

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City.....Zone.....State.....

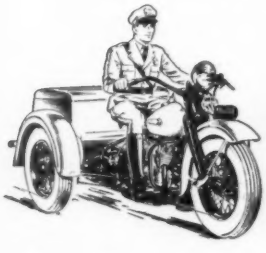
FOR 27 YEARS SPOKANE, WASHINGTON, POLICE HAVE USED HARLEY-DAVIDSONS EXCLUSIVELY

Shown at extreme left are C. F. Bruschi, Harley-Davidson dealer; Jerry Swartout, Police Chief, and Capt. L. Ferguson.

Motorcycles are unsurpassed for meeting new and old traffic problems

With traffic congestion increasing daily and police departments intensifying their efforts to curb accidents and prevent the terrible toll of deaths and injuries from mounting higher and higher, effective traffic controls are attracting more and more public attention throughout America. Spokane, like many other cities large and small, has found no method so efficient as motorcycle patrol for extending the effectiveness and range of police manpower in every phase of traffic regulation and accident prevention. Spokane police have used Harley-Davidson motorcycles and sidecars exclusively for 27 years. Ask your Harley-Davidson dealer to call with complete information about the superiority of the new Harley-Davidson Motorcycles, Servi-Cars and sidecars for traffic control and accident prevention.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
POLICE MOTORCYCLES

ANOTHER GREAT LEADER IN A GREAT LINE

FWD's FAMOUS MODEL "SU" WINS

$81,000,000.00 ENDORSEMENT

America's Foremost Heavy-Duty Truck

When a single model of a heavy-duty truck is purchased in volume reaching a total dollar value of $81,000,000.00 in less than six years, it rightfully gains leadership in its field. FWD's Model SU has won this extraordinary recognition and endorsement of motor truck buyers.

In every sense, the FWD Model SU is a great leader in a great line of trucks. It represents the most advanced development of the FWD four-wheel-drive principle pioneered by FWD in 1910, and recognized all over the world for outstanding heavy-duty performance.

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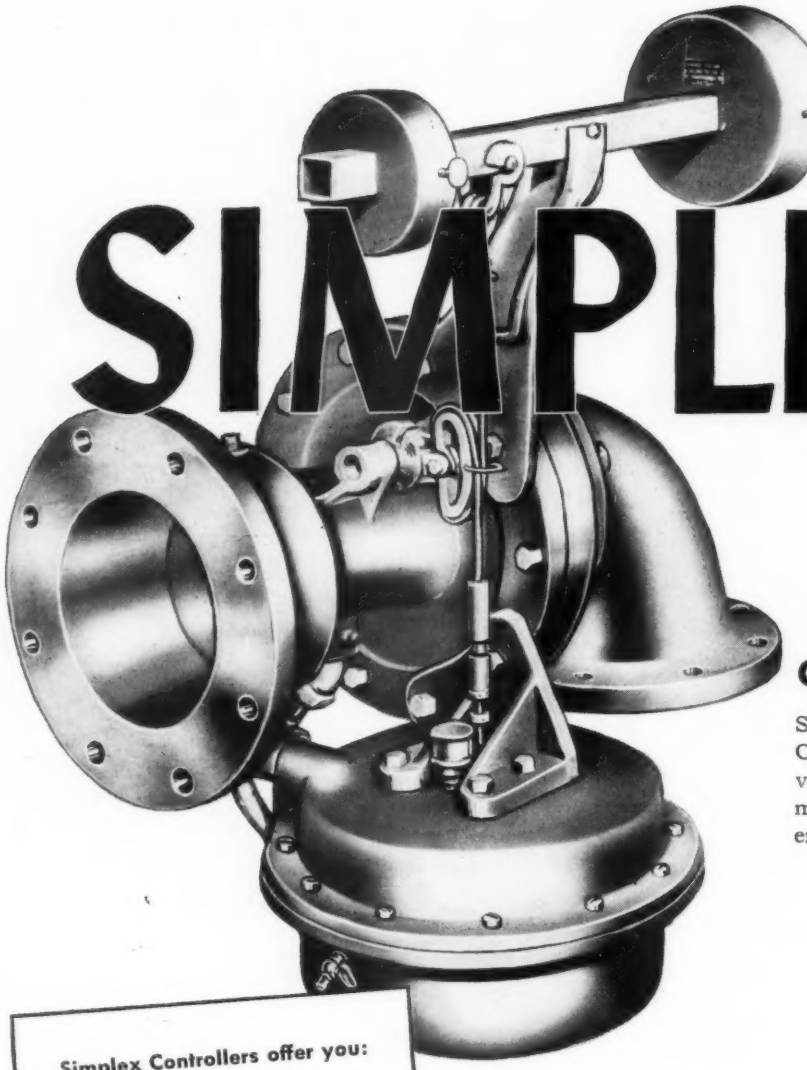

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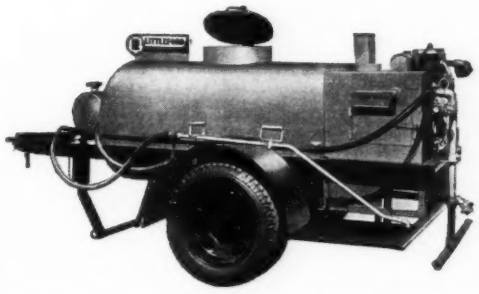
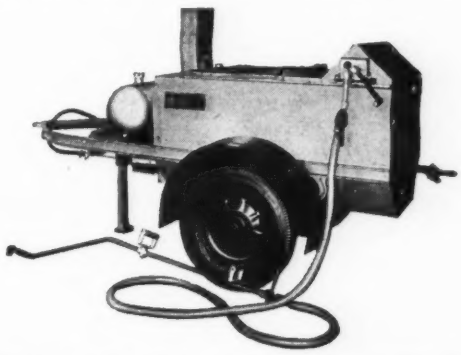


Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



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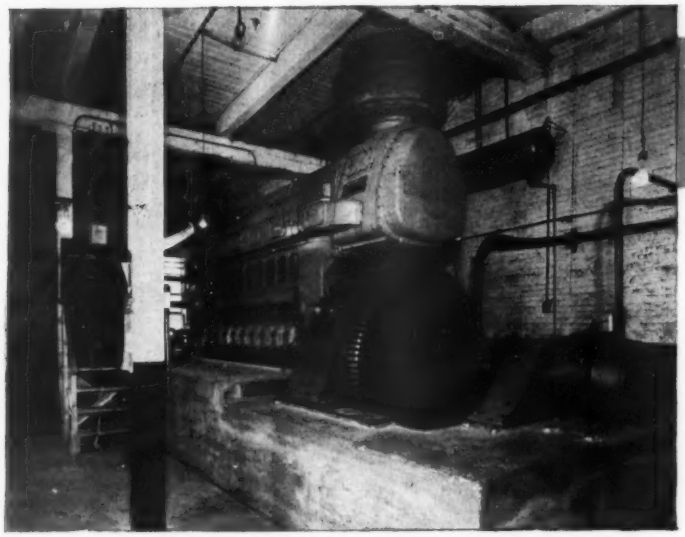
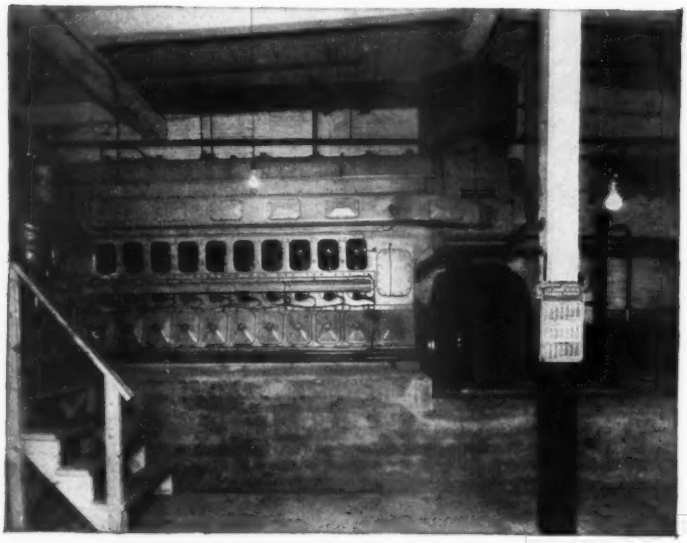


A 1000-KW Unit at Imperial Paper & Color Corp., Plattsburg, N. Y.



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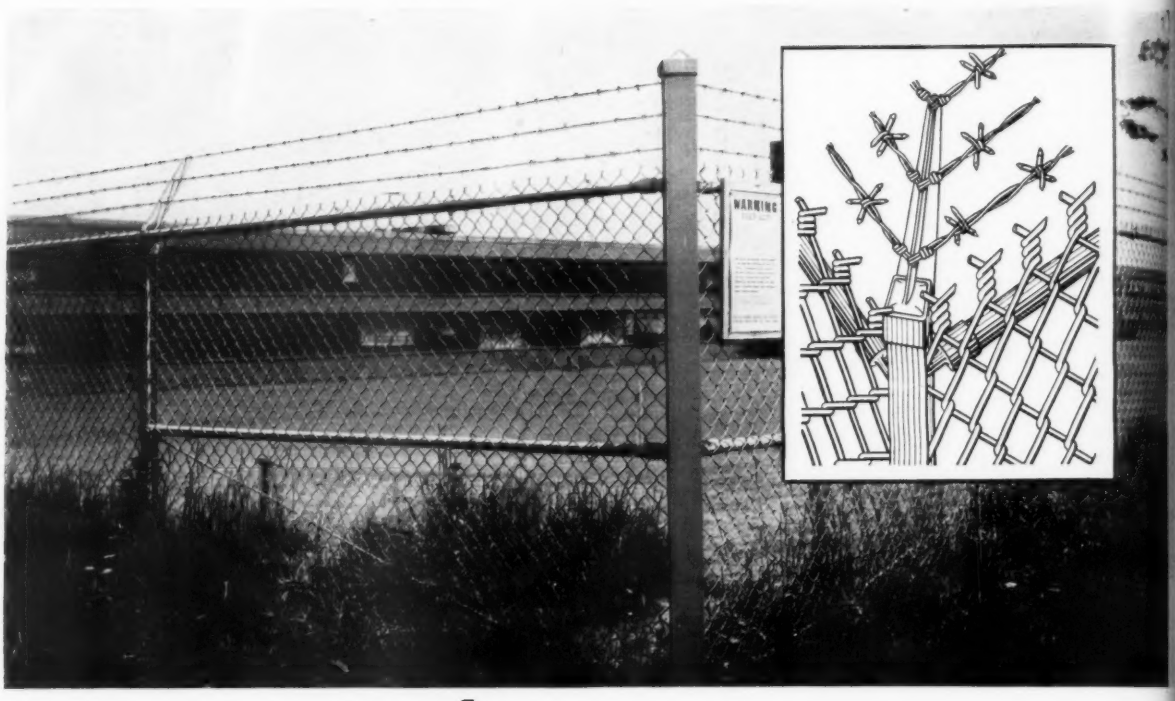

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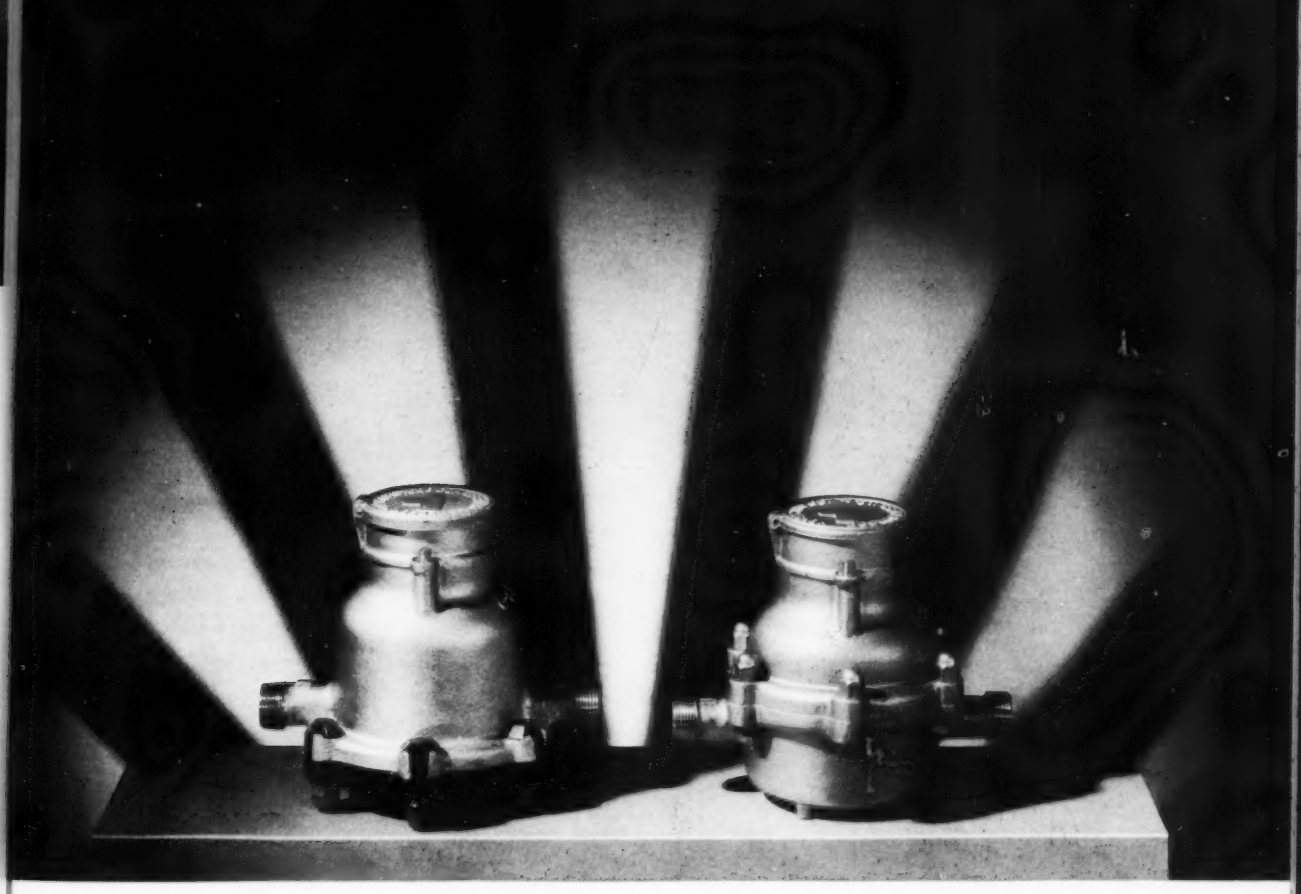

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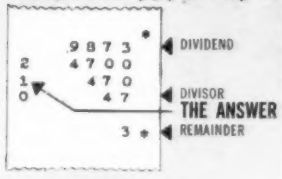

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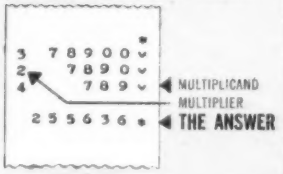

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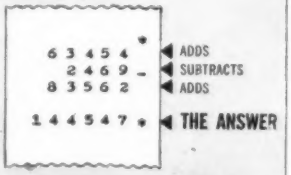

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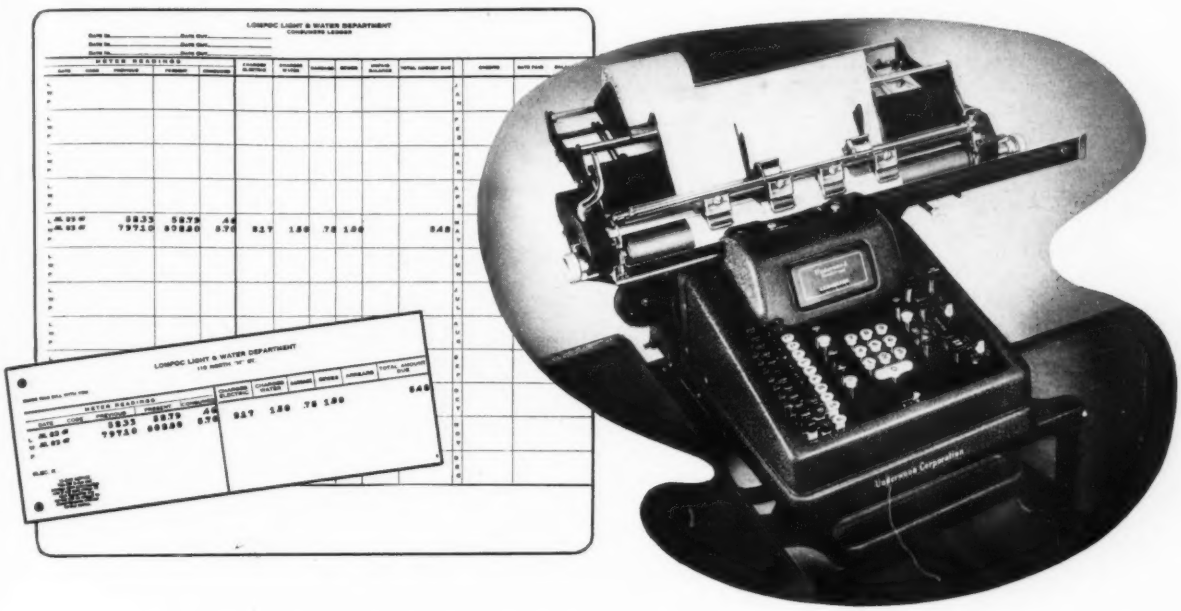

—whether it's the billing of water, electricity, garbage or sewer service OR ALL FOUR as at Lompoc, California, population 3379.

There are 1500 accounts. No one account has fewer than two services billed monthly. This was quite a job to be doing by hand. That's what the City thought. An Underwood Sundstrand was applied to the job and now two to three days of the former drudgery and hand work is performed by machine in one day.

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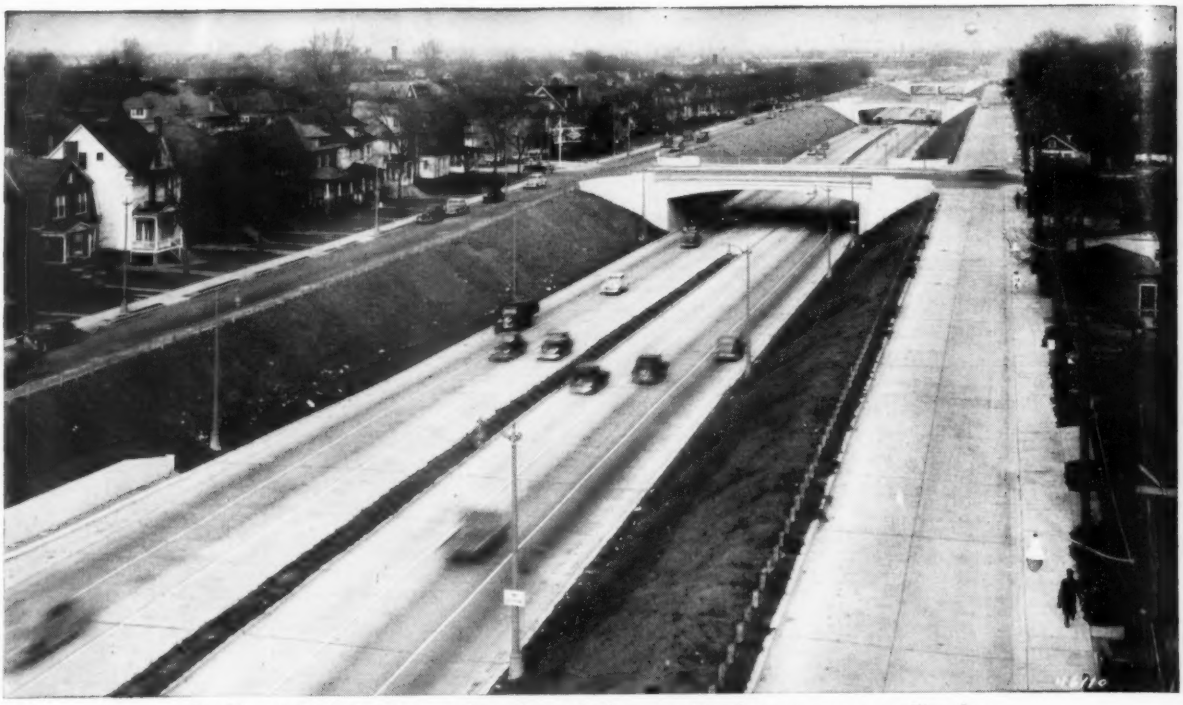

Traffic-choked streets can be relieved of congestion by expressways like the Davison Limited Access Highway in metropolitan Detroit.

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In Augusta, Georgia, this concrete residential street, after 25 years, is still giving economical service.

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Original Woodcut by Lynd Ward

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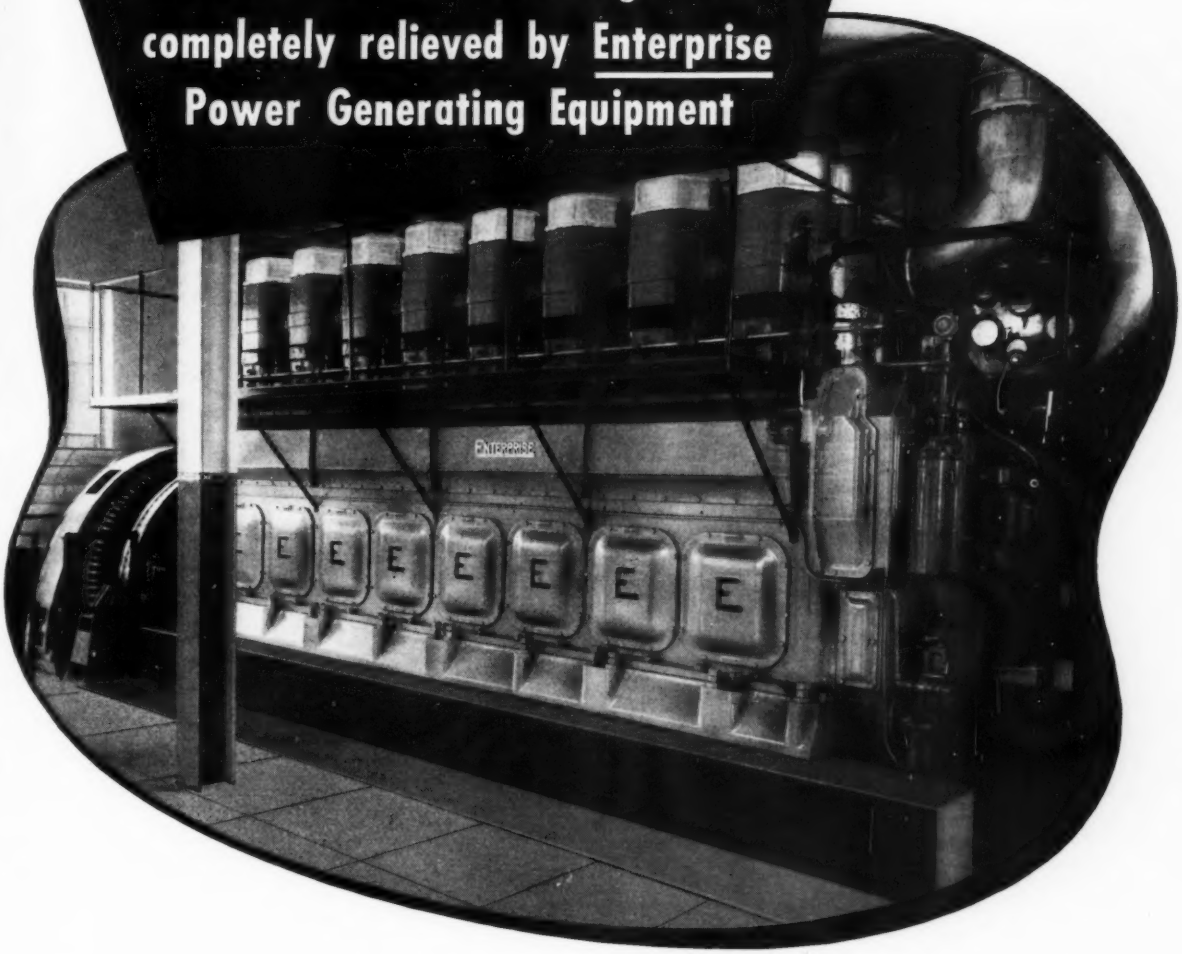

Since the installation of its first Diesel engine in 1921, the City of Elk Point, South Dakota has added new power to its power plant on the average of one every six and one half years. This year Elk Point suffered a most severe case of "growing pains," with greatly increased municipal and R. E. A. electrical requirements sorely testing the capacity of existing facilities. A new and larger unit was rush ordered, (an Enterprise Model DSQ-8) and the power house was enlarged to accommodate this engine plus a future unit.

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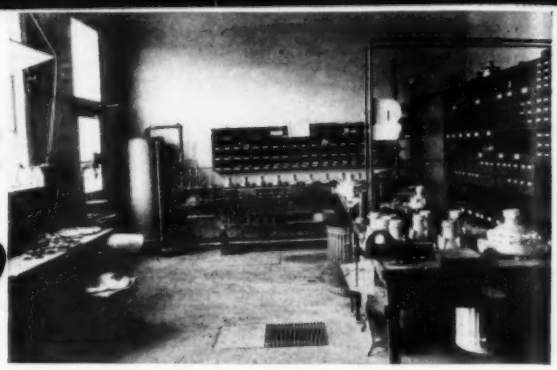
Look at your Meter Shop



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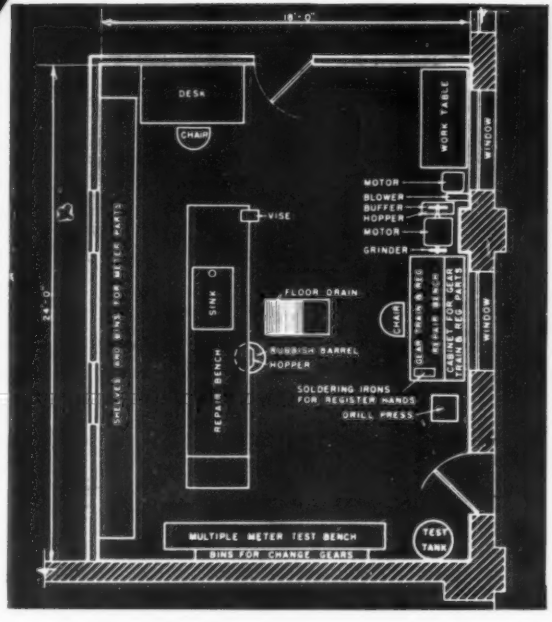

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177

Volume LXII Number 10
OCTOBER 1947
The American City

Time for Airport Planning

This large model, displayed last year at the National Aircraft Show in Cleveland, shows how a small landing strip and seaplane ramp (right foreground) can be effectively located near the central business district of a large metropolis.

By LOWELL H. SWENSON
Executive Vice-president
National Aeronautic Association

THE PRESENT LULL in large-scale airport construction offers all municipalities an opportunity to reappraise the aviation needs of their areas and to plan wisely for the future. As in the earlier development of the automobile, a correct interpretation of the trends will enable your city to be ready for full use of aviation both as a local business and for access to wider markets. To delay will involve costly readjustments in the future.

Although high construction costs and government economies have limited new enterprise in this period, the national airport program is not half finished. The outlay thus far is just over a billion dollars, nearly 80% from federal sources. Definite sites contemplated by the Civil Aeronautics Administration would cost at least another billion, not including the cost of the many small local fields that are needed for a complete commercial and private flying system.

New Airport Standards

Congress has authorized a seven-year program of half a billion dollars of federal money, to be matched by state and local funds. For the first two years, only $77,500,000 of this sum has been appropriated. It will go mainly for small fields and for improvements on large ones. Only three new airports of Class V and larger will be built with this initial grant.

But after a rapid decline from the high wartime volume of airport construction, the continuing increase of airline traffic, airfreight, and personal flying, together with the needs of air defense, will call for a resumption of the program. The communities that are ready will reap the advantages.

One obstacle to municipal airport development in the past has been the trend toward longer and longer runways. As fields have been completed under old standards, runway extensions of another 500 to 1,000 feet have been prescribed to meet the needs of heavier airline planes. For a time, it appeared

that the sky giants would require two miles or more for take-off and landings. Now 7,000 feet is being considered the maximum length for international service, while domestic flights will be handled in shorter distances.

CAA is now completing proposed regulations to set definite standards for runway length, width, and maximum pavement loading for four classes of service: feeder, local, express, and international. While aircraft design would not be frozen, future planes would have to be planned for standard airports. Pavement loadings, for example, can be reduced by use of multiple-wheel assembles in landing gears, even though planes grow larger.

Such standards would relieve the city planners of much uncertainty about the over-all dimensions of areas to be set aside for airport use. The shorter the runways, the more airports can be built for a given outlay, or the more runways can be installed in fields where traffic is heavy. Big repair bills, such as occur when pavements are over-loaded, can be avoided. Better construction methods also offer economies as compared to past practice.

For small fields, CAA anticipates major savings through use of the castered gear device which permits cross-wind landings. Thus it may be that single strips can be used instead of cross runways, which require several times as much area and the corresponding expense of construction and maintenance.

Until aircraft are equipped with the new device, flight strips will not afford safe landing in most areas. Development of roadable planes which may be four-wheel "flying autos," moreover, is likely to call for two-way landings. On the other hand, a helicoptor improved for general use or a hovering type of plane might require very little landing space.

Grass Airfields

At present, some 5,400 airports are in operation in the continental United States; of these 70% are sod fields without paving. Of more than 1,000 airports that have been developed within the past year by municipal and private funds, all but a few are small grass fields for private flying and flight training.

The trend has been to remove private flying activities from the airline and airfreight fields in favor of small outlying airparks. The noise, which has built up resistance to new development, will be largely corrected by better aircraft design and by stricter rules for flight over residential areas.

The fact that more than 1,000 fields have been opened in a year, despite high land and construction costs, despite absence of federal aid, and despite the temporary decline in demand for personal planes, is only a preview of what will happen when the flying movement really gets under way. Improvement of the utility of aircraft as a means of travel will stimulate the development of more airports, which in turn will make the airplane more useful. While less than 100,000 planes are now registered in the United States, many authorities expect four times that number in less than ten years. Growth, they predict, will be as in the early days of the auto industry.

On November 4 to 7, the National Airport Show and Institute will present a symposium in the Cleveland Municipal Auditorium of modern problems and practices in airport planning, design, construction, maintenance, and operation. It is under the joint auspices of the Air Foundation, sponsors of the annual Cleveland Air Races, and the 25-year-old National Aeronautic Association. Lectures by aviation experts from all parts of the country, equipment displays, and demonstrations will be given. Municipal airport and planning officials are especially invited. For information, write: National Airport Show and Institute, 400 Union Commerce Building, Cleveland 14, Ohio.

Meanwhile, the problem is to make present facilities pay, insofar as possible. Most municipalities cannot yet expect to get their airport money back. As in the case of good roads, a large initial investment is necessary as a basis for future returns.

The addition of non-aviation revenue, however, has placed many fields on a paying basis. The trend is toward making each airport a village in itself, with its own restaurant and recreational facilities. Shopping centers and residential areas are beginning to develop around airfields. These new factors begin to make it more attractive to city planners to develop the fast-access roads and speedways necessary to bring the airport within quick reach of downtown areas. Without this connecting link, much of the advantage of fast flight may be lost.

Extensible Buildings

Another challenge to the planner is the improvement of terminal facilities to make them big enough to meet peak loads and extensible for the needs of future years. The fast growth of passenger traffic and other airport use since the war has made many airport terminals woefully inadequate. This has deterred the further growth of traffic.

Airfreight has further complicated the problem through the need for warehouses and for refrigeration of perishable shipments at some points. Now that rates have been drastically lowered and the big scheduled airlines, as well as the independents, are in the business, the flying of merchandise, produce, and almost all imaginable commodities is going to call for drastic readjustments of the flow of incoming and outgoing shipments in the average city.

Each Problem an Individual One

There can be no standard plan. Each airfield presents the distinct problem in regard to the type of activities—passengers, main, freight, private flying, maintenance, and non-aviation adjuncts. The trend is toward buildings of modern style which must be extensible. At the same time, forethought must be given to contraction of service when part of the activity is transferred to outlying fields.

It all adds up to a tremendous business which invites new talent and new ideas. Hundreds of millions will be spent on airports within the next few years. It is to the interest of all that these funds be expanded by careful plan rather than hit-or-miss.

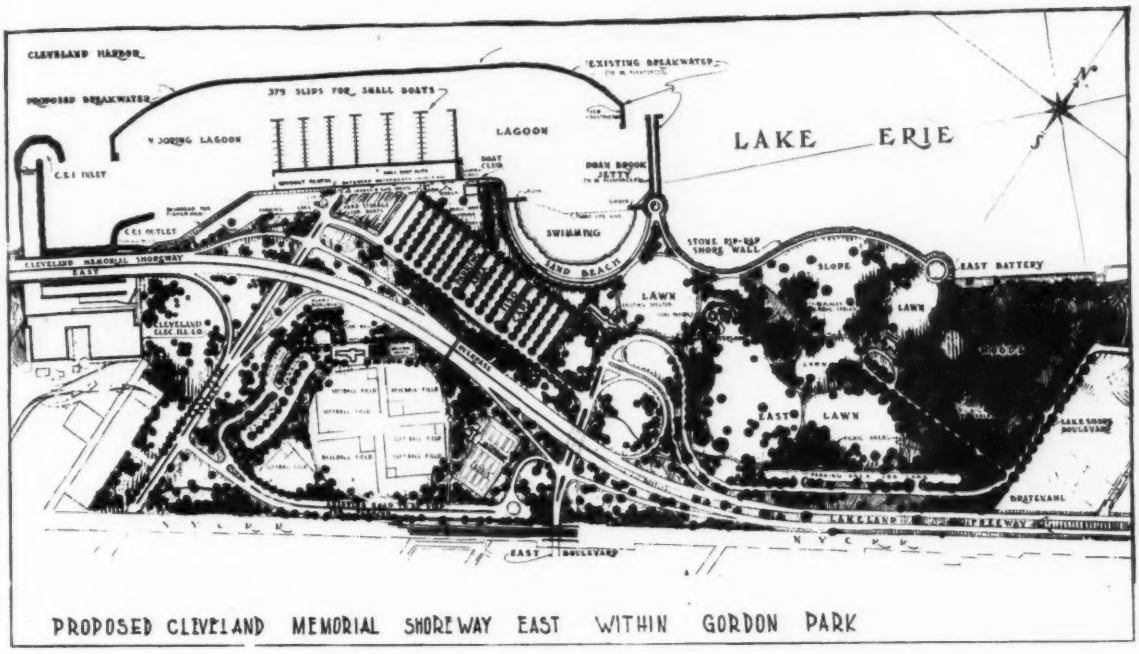
One of the handicaps thus far has been lack of engineers and technicians fully conversant with modern airport needs and practices. This has been a large factor in delay in the national airport program. CAA had the money, but the average city was unable to get its plans in shape for approval without many months of effort.

Information Can Be Obtained

But it is a business that can be learned. The National Aeronautic Association in recent years has been giving greatest stress to the dissemination of practical airport information. A quick review of the most important developments is offered in the National Airport Show and Institute, jointly sponsored by NAA and the Air Foundation.

This non-profit symposium, to be held November 4 to 7, in the Cleveland Auditorium, will include talks by leading experts in all airport matters, and opportunities for discussions with these men. Equipment will be exhibited and practical demonstrations given.

All city and state governments are cordially invited to send representatives, or delegations if possible, to see the show and to exchange ideas with men from other areas. Please mark the place and date on your calendar and register promptly. This trip can pay big dividends to your city.



Cleveland Design Standards

. . . for the Memorial Shoreway express route

AFTER studying and reporting what to do and after developing the "Express Highway Plan for Metropolitan Cleveland," the Regional Association of Cleveland, Ohio, through its Highway Committee, now makes recommendations on how it feels the work should be designed.

The Memorial Shoreway through Gordon Park is an important link in the Cleveland Expressway system. Already under construction is the Lakeland Freeway, and in the planning stage is the Eddy Road Interchange, with construction definitely scheduled for 1948. Lakeland Freeway cannot serve as a proper traffic artery until a connection through Gordon Park has been constructed.

The recommendations call for the express route link to start at the Cleveland Electric Illuminating Company Bridge and proceed in an easterly direction to connect with Lakeland Freeway. The proposal calls for the first 1,600 feet to occupy land not now used for park purposes or new land made by filling in the lake; the next 1,200 feet will cross the edge of a slightly depressed athletic field, and the remainder will pass through a section that is part wooded ravine and part marginal railroad land not used for park purposes.

The design was predicated on these considerations:

1. The need to supply a freeway and ramps to meet traffic requirements.
2. The preservation of as much park area as possible, whether for active or more quiet types of recreation.

Under present arrangements the entire construction cost is divided between the State Highway Department and the Federal Public Roads Administration. Its detailed design will be along these lines:

Ultimate capacity **— 2,000 vehicles per hour per lane.**

Maximum grade **— Freeways, 3%; ramps, 5%.**

Maximum Curvature**—Freeway, 3°, (1,910-ft. radius); ramps, 42½° (135-ft. radius).**

Minimum length of acceleration lane**—950 ft.**

Minimum length of deceleration lane**—320 ft.**

Design Speed **— Freeways, 70 mph.**

Normal use speed**—50 mph.**

Gordon Park, where the Shoreway will be located, has been developed into one of the city's largest outdoor recreation centers. This accounts for the emphasis on locating the throughway in order to preserve as far as possible these recreational areas.

The proposed route destroys one baseball diamond and four tennis courts —the least amount of damage done by any of the plans studied. The proposed location bisects the park so that pedestrian overpasses are necessary. But the division is along lines where the character of the recreation also differs. One area is developed heavily for athletic sports such as baseball and tennis, while the other is for picnicking and quieter family outings. Therefore, the proposed route acts as a convenient separator of activities rather than an obstructive barrier.

Furthermore, most of the trees that would have to be sacrificed for the freeway are already dying. The Committee has made further recommendations that additional park land be acquired which carries a more sturdy stand of timber.

Construction costs for the expressway have been estimated at $3,000,000.

The City Tells Its Story—VII

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

Philadelphia exhibition is city planning's biggest bid yet for public support

THE BIG lack-of-public-knowledge boulder blocking the road to accomplishment of a better Philadelphia is being rolled out of the path of progress by the dynamic force of the Philadelphia City Planning Exhibition.

To explain the six salient points of the exhibition in detail:

City Planning Progress.—As the most significant thing that has happened to planning in nearly a score of years, the Philadelphia City Planning Exhibition will stimulate general public education in city planning. It will be written about profusely in the months to come. You'll see it in the movies and you'll hear it on the air. It will make city planning public property—which is only what it should be.

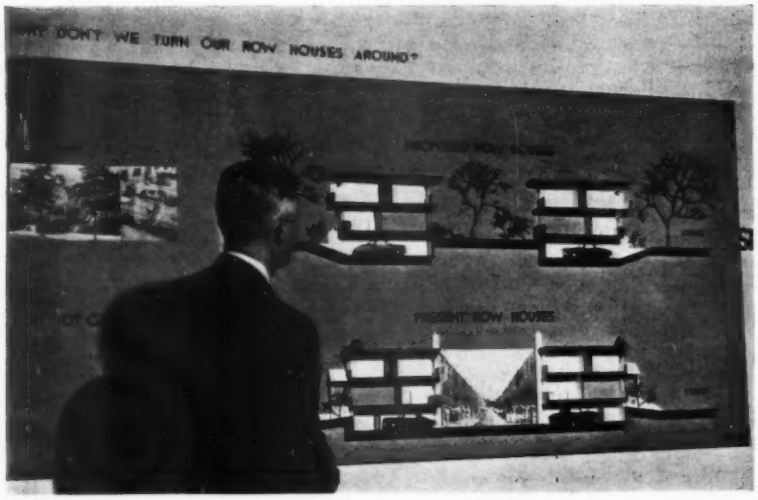
Public Relations Example.—As the most outstanding use of the exhibition tool in municipal public relations, Philadelphia now provides the best illustration in the field of public relations in planning. Tracing the techniques employed from start to finish will be well worth it to any who may have to handle an exhibition sometime. You may not be able to do everything they've done in Philadelphia, but some ideas may be of real value.

Urban Redevelopment.—Looking within its own environs to get rid of the bad and save the good, to reconstruct and to preserve, Philadelphia discovers, in facing present facts and future needs, a new frontier challenging courage and demanding action.

The acceptance of the challenge and the determination to act, both very explicit in the exhibition, is a third important fact. It may set the pace for urban redevelopment under city planning in many other cities that are worrying about decentralization but haven't been able to grapple with the problem at its source. At any rate, Philadelphia's follow-through will be closely scrutinized by such cities.

City Planning Is the People.—Philadelphia provides the greatest opportunity city planning has yet developed to give continuous working proof that city planning is the people. In the first place, it is to be permanently set up so that it can be viewed and reviewed constantly by the public.

In the second place, and because of this, it will serve as a constant reference for the people, permitting them to express themselves directly and dramatically in regard to the program. In the third place, it will be open to revision and improvement as suggestions come



Above: Two girls looking at the Harrison grade school children's concept of their neighborhood as it is today and as they would like it to be. This was one of the outstanding examples of work on models by school children. Left: One of the wall exhibits presenting the idea "Why don't we turn our row houses around?" It shows how, by eliminating a center street, more space could be made available for outdoor living and recreation.

Citizens look down on part of the large three-dimensional model, on which sections are rotably mounted, showing how Downtown Philadelphia will appear when redevelopment is completed.

their own organization to the City Planning Commission.

Youth Is Planning.—If there is anything lacking among the general run of adult Philadelphians in the way of what people north of Boston call "sprawl," the youngsters appear able and willing to make up for it. The originality, ingenuity, imagination, and daring of the displays by school children can not help but stir a vast amount of appreciation and understanding among the adult citizenry.

The children's work—sketches, layouts, drawings and models, and their ideas—on the location of play areas, parks, homes, and streets, is all the more remarkable because they worked out their own techniques and expressed so soundly and freely their own ambitions—unaided save for a few materials. If they should get what they want as they want it—or practically so—it will be the greatest story to come out of the exhibition.

Neighborhood Planning. — Encouragement and fostering of neighborhood planning groups is a definite part of the Philadelphia plan—a part that is generating a large amount of enthusiasm and is bound to gain momentum. Neighborhoods will be able to take stock of themselves as units within the central city itself. They will correlate their thinking, their objectives, with the city planning picture as a whole through the Citizens Council on City Planning.

This organization, representing more than 100 civic, professional, and welfare groups, in turn can translate the individual neighborhood needs in terms of the pattern of city-wide growth. Result: performance of a real service to the people by encouraging their part in planning and to the City Planning Commission by operating as a clearinghouse. That is the significance of developments in neighborhood principle application as conceived in the exhibition. Its ramifications may be considerable elsewhere.

The Show Itself

If you could have seen the crowds thronging down the ramps into the first section of the exhibition on the third night after its opening, you who are interested in city planning would have been amazed, elated, and thoroughly thrilled. It seemed almost incredible. But Philadelphia did it! They counted more than 50,000 in the first three days of the exhibition—and even the electric eye couldn't catch them all, the way the people crowded through!

At the start you have a dioramic view (with commentary) of "The Better Philadelphia." Then you are escorted through a darkened circular theater, pausing before four successive stages to see graphic presentations of the growth and decay of the city since 1682. The most effective of these, you notice from the gasps of the audience, is the degeneration of an originally good neighborhood into a blighted site, and throughout you find the commentary tying in perfectly—putting YOU, if you are a Philadelphian, on the spot. You are made aware that Philadelphia is changing and that you can do something about it to *make* changes good instead of *allowing* them to be bad.

If you didn't realize that planning is a natural thing in everyday life, a series of large black-and-white cartoons by Robert Osborn in the next section provides a light touch to show that it is. You are introduced next to the section on the work of the City Planning Commission—as large in itself as some of the city planning shows you have seen and by far, undoubtedly, one of the most superb and definitive. "All pulling together" is the theme—through the plan to achieve "the city we all want."

The display shows how *all* departments of the city government cooperate toward a better city and is dramatized by converging and diverging ribbons and the clever use of transparent plastic panels. Here also you see spectators really studying the planning program panels that describe the activities and plans of the commission.

A basic fact of planning in Philadelphia, as Robert B. Mitchell, Executive

Director of the City Planning Commission, will tell you, is practice of the concept that the Planning Commission must be dependent upon cooperation with other departments.

"The policy of the Planning Commission," Mr. Mitchell told me, "is that the important thing is to work toward a situation where planning becomes a habit."

The relationship of the planning penny to the tax dollar is explained to you when models of public improvements, each price-tagged, are paraded on a moving belt. You go from this, quite logically, to a four-part, table-high aerial map of the city, whereon the continuing six-year plan of public improvements is plotted with illuminated colored plastic symbols showing the parks and playgrounds, schools and hospitals, highway and sanitation projects. You find yourself and your neighbors searching and pointing and locating what is in store for your own neighborhood.

Then you go up a ramp and along a balcony where you look down upon a vast three-dimensional model of Downtown Philadelphia. People are swarming down the ramps and around the model. You see the city as it is today. But as the recorded commentary proceeds, certain sections (r o t a b l y mounted) are presently transformed into improved and modern central city areas. The most costly portion of the exhibition, it gives you—the downtowner, the outskirter, the suburbanite, and the city visitor—a realistic view of the type of good changes that can come if planning controls are exercised and are supported by YOU.

Neighborhood Plannings

Returning from the general to the particular, you pass by three large moving hands that reach down from a wall to remove blighted parts of your city ("Too many people in too little space") and suggesting YOU can "have a hand" in replanning neighborhoods. So you move on to a typical and specific street corner, into a house—but with an improved backyard. Then moving along farther you come upon a large-scale model of a well-planned neighborhood—your own as it could be, and—many new neighborhoods make a new Philadelphia. Open land may become blighted by crowded developments unless careful planning is applied in time—and you see an example of a well-planned community.

As you pass along to the extensive exhibit of planning work by the schools, you see first a series of photographs, each a bit larger than the preceding one, illustrating the steps taken by the children, from "We discuss a project" to "We talk to our councilman." There follow the many models and other work from a wide range of grades and from the people through channels of schools. Several models show both existing conditions in the neighborhoods of the young planning workers and these same locations transformed into neighborhoods of safer, roomier, and more healthful living than they "enjoy" today. The neighborhood is further emphasized at the close of the exhibition with the work of a South Philadelphia and a West Philadelphia neighborhood group.

You move into a darkened corridor for the climax of the exhibition, receiving a "blank" Mayor's-Office letterhead, pass under special lighting, and read a message from Mayor Bernard Samuel which urges YOU to civic pride and cooperation in the planning and realization of a Better Philadelphia.

What does city planning mean to Philadelphians after they experience this exhibition which grew out of the people, cost some $350,000, of which two-thirds was citizen-subscribed and one-third was from city funds, was executed under the inspiration and genius of the team of Oskar A. Stonorov, Technical Director, and Edmund Bacon, Co-Designer, and represents an investment of less than-one-tenth of one per cent of the improvements it envisions?

Only the coming months and years will tell—in the planning action of the people, in the kind of permanence the exhibition achieves, in the measure to which the program is carried out, in the growth of the neighborhood group planning idea, and in the overall tone of the city as the full import of the related words YOU, CHANGE, NEIGHBORHOOD, PLANNING, sinks into the minds of Philadelphians.

Fortune Articles Urge Housing Industry Reorganization

IN ITS August issue, *Fortune* magazine declares, *"Only major money and modern organization, plus brains, will ever rescue the housebuilding business from its feudal controls and its chronic incompetence."* Urging that the construction of homes be put on a large-scale, mass-production basis, the article, "The Industry Capitalism Forgot," points out:

> Although every participant in the industry—builder, supplier, and worker—has managed to make himself secure against the inroads of the competitive marauder, the result, paradoxically, has been security for no one. That is the great misfortune of the industry as compared with its medieval antecedents. The guild masters lived in a settled orderly world where the lives of others were as comprehensively regulated as their own; today's housebuilder and his unions and suppliers live in a dynamic society in which their rigid defenses against cost and price reduction are an anachronism that exposes them to the most exaggerated effects of the business cycle. Residential building in the U. S. is a feast-and-famine industry, because only in times of general feasting will customers pay the prices on which—come feast, come famine—it rigidly insists.

Passage of Housing Bill Urged

Continuing its hard-hitting attack on the housebuilding business, calling it "medieval in its restrictive, guildlike organization, archaic in its production methods, inadequate in its capitalization, and obscene in its politics," *Fortune*, in its September issue editorial entitled, "Let's Have Ourselves A Housing Industry," sets forth the following recommendations:

"At the next session, Congress should put the Taft-Ellender-Wagner bill high on the calendar. Good housing is at least as urgent as good postal service and quite as proper a field for public action. The T-E-W bill supplements private enterprise at its weak points and strengthens it where it could be strong."

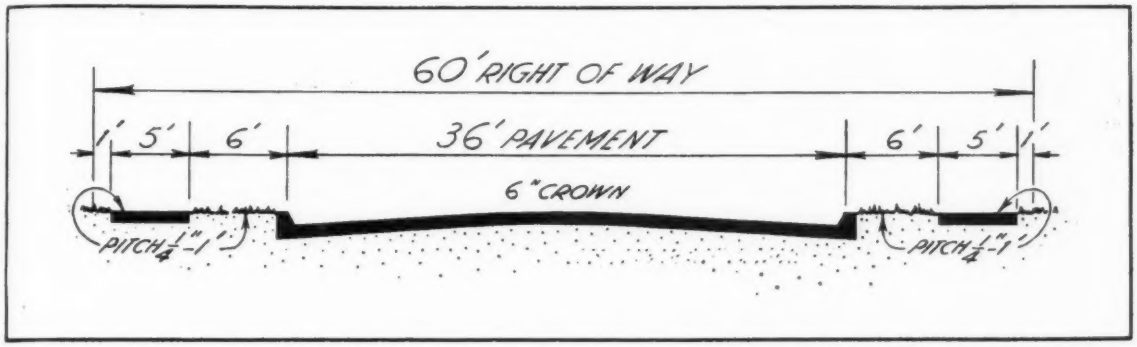
Housebuilding Innovations

Local officials also have definite responsibilities in promoting housebuilding innovations: "The man who devises radically new housebuilding methods almost invariably incurs the deep displeasure of unions, his competitors, and, in many cases, local municipal authorities." *Fortune* suggests that Thurman Arnold's great drive on the building industry in the thirties should be revived as a permanent and expanding function of government, and should be completely catholic in its coverage of builders, subcontractors, unions, and municipal officials.

To provide capital, *Fortune* proposes that 50 million dollars of RFC funds be ticketed for a five-year experiment in financing housebuilders who have a good reputation and a new idea, but who lack the money to go ahead. The magazine adds, "the genius who is put in charge of these loans should be told that his reputation depends not on getting the money back but on getting a hundred good men with at least twenty new ideas in successful operation by 1953."

Residential Street Design

Standards established by the Federal Housing Administration in its Land Planning Bulletin #3



A cross section useful for apartment or row-house developments, or for single-family homes on "collection streets."

TO keep an otherwise well-designed residential area from being weighted down with the handicap of narrow, inadequate, awkwardly constructed streets, the Federal Housing Administration, Washington, D. C., has established certain minimum standards that can serve as a guide for all such residential street improvements. They cover basic points in improvement developments for apartments and row houses and for one-family detached houses, as recommended by FHA:

Apartments and Row Houses

For apartment and row-housing developments, the 60-foot right-of-way has proven satisfactory. The pavements should provide at least two moving lanes and two parking lanes, thus requiring approximately 36 feet of roadway.

The street design should carry in all cases a portland cement concrete curb, or curb and gutters, for the pavement edging. Because of the relatively high traffic density, pavements should be of a higher type than those used generally for developments of one-family detached houses. Asphaltic concrete constructed 2 inches thick on a pavement base that is designed to carry the contemplated traffic load is considered good practice. Properly designed and constructed portland cement concrete pavements are, of course, always reliable. The practice of using portland cement concrete on excessive grades is practical. This prevents erosion and holds maintenance costs to a minimum. When cement concrete pavements are constructed, curbs should be an integral part of the pavement.

The cost of portland cement concrete pavement with integral curbs often compares favorably with macadam-base asphaltic concrete with P/C concrete curb and gutters, and offers the advantage of lower maintenance cost.

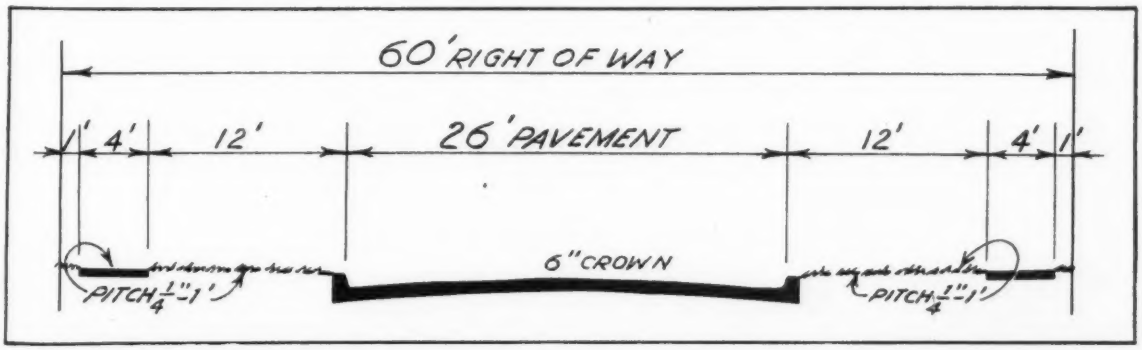
Driveways should be paved from the street pavement to connect with any driveways on the properties. The driveway aprons at the curb should be adequately flared to provide convenient approach. Where access to garages and private parking spaces is from the rear, as is typical in row-house developments, the rear alleys should be at least 15 feet wide and be provided with good drainage and permanent paving.

For the convenience and safety of the residents of the apartments and row-house developments, P/C concrete sidewalks should be at least 5 feet wide and 4 inches thick, except at the driveway crossings, where the sidewalk thickness should be increased to 6 inches.

Street Trees

Street trees should be planted approximately 50 feet apart or in natural groups in order to increase the livability and appeal of the development. The trees should be selected for adaptability to local climate and soil conditions, for resistance to disease and insect pests, for healthy foliage that with-

For minor streets, culs-de-sac, and marginal access streets, a 26-foot pavement width is adequate.



stands dust and smoke, and for a root system that will not damage near-by utility lines and paved areas. Street trees should have open growth, high branching, and an ultimate size proportionate to the surroundings. While trees of at least 3-inch caliper are usually satisfactory, it is sometimes desirable to plant larger trees to obtain an immediate effect in the development.

To hold down dust and prevent erosion, a thick stand of grass or other plant material should be established in the unpaved areas in the rights-of-way. Topsoil should be of quality and sufficient depth to support plant growth.

For one-family detached house developments, the standard practice is to have rights-of-way of 60 feet for the collector streets, 50 feet for minor streets, and 40 feet for short culs-de-sac and marginal access streets. The pavements for collector streets should provide two traffic lanes and two parking lanes, or a width approximately 36 feet. For minor streets, culs-de-sac, and marginal access streets, the pavement should provide for three lanes or approximately 26 feet. Culs-de-sac should terminate in a turning-circle of approximately 100 feet in diameter for the right-of-way and 80 feet in diameter between curbs.

Developments or one-family detached houses should have P/C concrete curbs or curbs and gutters for the pavement edging. Experience shows that for this type of development, a pavement equal to 1-inch bituminous road mix top or a double bituminous surface treatment, constructed on a base designed to carry the contemplated traffic load, is usually satisfactory.

To provide proper convenience and safety for the residents of one-family detached house developments, portland cement concrete sidewalks should be at least 4 feet wide and 4 inches thick, except at driveway crossings, where the sidewalk thickness should be increased to 6 inches.

The standards for tree-planting are the same as those for apartments and new houses.

Dayton's Stewart Street Paving

. . . gives access to new home building development

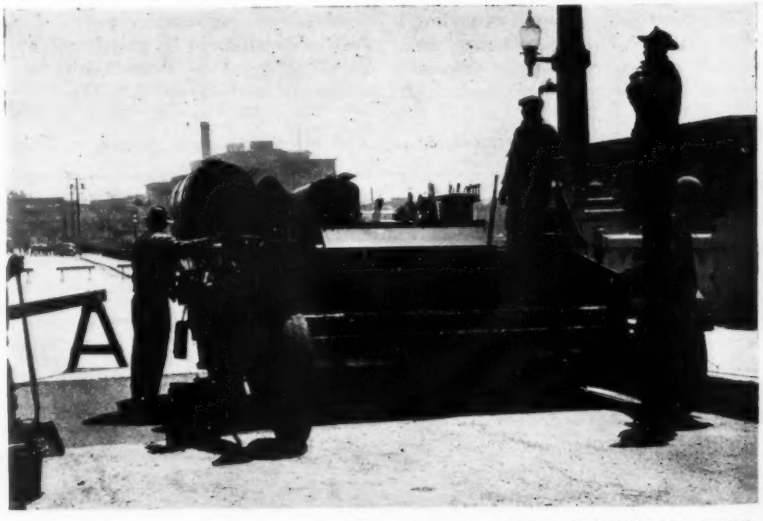
STEWART STREET, in Dayton, Ohio, has come in for some unexpected traffic loads resulting from a busy home-building program. As a result of this, the city found itself faced with the need for resurfacing approximately 3,000 feet of this street in order to give access to these now homeowners. Included in this resurfacing is 550 feet of bridge deck whose original brick flooring was badly shot.

The paving consists of a 4½-inch asphaltic concrete surfacing mixed in the city's plant and laid by city forces. The asphalt is being laid in two 1½-inch binder courses and one 1-inch surface course. The mix conforms to the Ohio State Highway Department specifications T-35. This is in the same general category as the Asphalt Institute specifications A-2-A, mixes #3 and #5. The chief difference is that the Ohio specifications have a top limit of 1 inch for aggregate where the Asphalt Institute allows a 2-inch maximum size. The Ohio specifications also call for a No. 6 sieve grading, which the Institute and virtually all other specifications do not have.

The city uses an Adnum paver to lay the surfacing and rolls it in place with a 10-inch Kelly tandem and a 12-ton Galion roller. The work is under the direction of F. O. Eichelberger, City Manager. At the time the construction was begun, the late W. O. Pease was street superintendent.

Dayton's Galion roller takes over to bring the layer to a compact, firm density.

Right: The paving crew maneuvers an Adnun paver into position to begin laying another strip in the paving program. Below: The late street superintendent, W. O. Pease, keeping tabs on the Stewart Street paving project.



Stabilization of Municipal Expenditures

By WILLIAM STANLEY PARKER, *Architect, F.A.I.A.*
Consultant in Public Works Programming, Boston, Mass.

I. Municipal Capital Outlays

This category of expenditures is of great importance.

In any normal time it is probably the largest segment of public works.

Heretofore, budgeting generally has been on a year-to-year basis, following the boom and depression experience of private industry.

During the 1930's, this practice constituted a serious handicap to federal activity.

President Hoover's administration *increased annual federal outlays* by $300,000,000.

During the same period, states and municipalities *reduced annual outlays* by $2,000,000,000.

The federal emergency program required five years to offset this deficiency in another category of public outlays.

The federal program was thus prevented from functioning on the counter-cyclical principle to offset decreased private spending.

II. Practical Procedure for Municipalities

The counter-cyclical policy is inapplicable.

Local economic conditions are not always similar to national trends.

The method of budgeting and sources of funds prevent local legislators from thinking in terms of a counter-cyclical policy.

In the past they have instinctively followed the lead of private enterprise —large outlays in good times, making the boom greater; small outlays during depressions, making the depression deeper.

The first need is to stabilize outlays by municipal governments.

If a Policy of Stabilization is adopted, it *can* be understood locally.

It requires no guidance or control by state or federal action.

Each municipality would aim at stabilization of its own operations.

Local governments can be assisted by state and federal action in a serious depression.

The policy would require advance programming as a basis for intelligent action.

Protected municipal reserves would greatly assist in stabilizing expenditures and tax rates.

Stabilization would be logically approached by a six-year program with annual outlays substantially equal.

III. Promulgation of the Policy

Since the President's Conference on Unemployment in 1921, reports of national agencies have promulgated repeatedly the counter-cyclical theory as applicable to all levels of government.

Recent examples are the following: I.L.O. report, *Public Investment and Full Employment*, 1946; Federal Reserve Board, staff report, *Public Finance and Full Employment*, 1945; Council of State Governments report, *State-Local Relations*, 1946.

The first two specifically, and the third somewhat less specifically, advocate or assume the application of the counter-cyclical policy to local municipal expenditures.

Since it is impossible for local officials to apply the counter-cyclical policy, such advice is wasted and progress towards stabilization is delayed.

Its impracticability was asserted in the Report of the Massachusetts State Planning Board, March 1938, and a policy of stabilization and the need of reserves outlined.

Its impracticality was strongly indicated in the Council of State Governments' 1946 document, but without indication of an alternative policy.

Stabilization of municipal expenditures and the use of municipal reserves were suggested by Hansen and Perloff in *State and Local Finance in the National Economy*, 1944.

Fiscal weakness of municipal governments is a national weakness. It can absorb federal compensatory spending in a depression and nullify its effect as an offset to reduced private spending, as it did in the 1930's.

In order to permit federal compensatory outlays in a depression to be effective towards stabilization of the national economy, it is necessary first to stabilize municipal outlays.

This cannot be accomplished without first the enunciation of an agreed-upon policy by which it can be practically attained.

The policy of stabilization, as indicated herein, should be enunciated by all national agencies concerned.

Considerable experience in municipal programming has been secured already.

The technique was developed by the Committee on Public Works of the National Resources Planning Board, 1939-1943.

New York and various other large cities have adopted programming.

In New England at least 34 cities and towns have initiated programming.

Municipal reserves, not permitted in 1938, are now permitted by statutes in 26 states.

A continuing program of education supported actively by the Federal Government and states will be needed to develop an understanding of the need of local stabilization policies and how they should be administered.

The past eight years provide a firm basis of experience to build on.

Official promulgation of the Policy is urgently needed.

Counter-Cyclical Policy

The "counter-cyclical" theory recognizes the desirability of increased public spending in periods of threatened or actual depression and of curtailing such spending in periods of threatened or actual boom.

City and town expenditures normally constitute about half the total of public expenditures. Flexible programming of public works is possible and desirable for the Federal Government. It is practically impossible to accomplish this effectively among cities and towns. If city and town expenditures can be *stabilized*, however, a flexible federal program can be administered so as to provide a substantial offset to a depression in private enterprise.

EDITOR'S NOTE: William Stanley Parker, author of the foregoing statement, was a member of the Public Works Committee of the National Resources Planning Board that developed techniques for municipal programming. He has specialized in this work for the past eight years and is available to assist municipalities in the development of six-year financial programs.

Mr. Parker may be addressed at 120 Boylston St., Boston 16, Mass.

How To Acidize Water Wells

By M. M. DeWITT
Development Engineer
Dowell, Inc., New York

THE WATER WELL usually does not present a difficult engineering problem in its treatment. It is relatively shallow, its pressures are low, and its producing formations usually are responsive to proper chemical application. Instead, the difficulties to which it is susceptible make the problem that of the selection of appropriate chemical solvents and treating techniques.

In its passage through the earth, water will dissolve and carry with it some of the minerals with which it comes in contact. As the water flow converges at the well bore, it encounters different pressure conditions and mixes with other formation waters which can cause it to precipitate and to deposit some of its mineral content at the face of the formation, the screen, the pump, and other metal equipment. These scale depositions will plug the screen, reduce the pump efficiency, and assist in oxidation and corrosion of the metals. As the waters converge on the well bore, they also carry sand and sediments which may clog the flow channels, restricting the flow of water into the well.

A decrease in the production usually is the first indication that one or more of several possible situations exist. In the case of a purely mechanical difficulty, such as the failure of some part of the operating mechanism, the water supply reduction may be quite sudden, and the trouble is readily apparent. But where the indication of trouble is more gradual, such as a steadily increasing drawdown rate, the difficulty need not be of a mechanical nature.

A decrease in the water available for production, caused by a lowering of the water table which determines its natural drive, is always possible. Here it should be remembered that the hydrostatic head of the well does not necessarily represent the level of the water table. Some wells develop circulation within themselves among two or more zones. If internal circulation is suspected, one of the several accepted methods for determining the "thief" zone should be used. A lowering water table may be caused by several factors, such as overproduction and periods of low rainfall. However, a decrease in available water can be due to causes other than a lowering water table, such as restrictions in the formation at the critical area near the well bore, or at the screen. This situation is revealed by an increase in drawdown at a given rate of flow and an increase in the time necessary for the well to reach its static level when off production. Where these difficulties exist, the proper application of chemical solvents usually is an efficient and effective remedy.

RESULTS OF WATER WELL ACIDIZING

Location of Well	Use For Water	Type of Completion	Type of Formation	Acid Used (Gals.)	Production (gpm) Before Acid	Production (gpm) After Acid	% Increased
Illinois	Domestic	Open Hole	Limestone	3,000	400	800	100.
Wisconsin	Domestic	Gravel Packed	Sandstone	5,000	850	1,250	47.1
Ohio	Industrial	Open Hole	Limestone	1,000	200	800	300.
Kansas	Domestic	Gravel Packed	Sand	1,000	200	800	300.
Maryland	Domestic	Screen	Sand	1,000	175	450	157.
Indiana	Domestic	Gravel Packed	Sand	1,000	150	400	166.7
Kansas	Industrial	Screen	Sand	2,000	58	300	418.
Ohio	Industrial	Open Hole	Limestone	1,000	195	285	46.
Illinois	Domestic	Gravel Packed	Gravel	1,500	50	250	400.
Texas	Domestic	Open Hole	Limestone	9,000	65	632	872.
Illinois	Domestic	Open Hole	Dolomite	2,000	133	221	66.
Wisconsin	Domestic	Screen	River Gravel	500	375	715	90.7
Illinois	Domestic	Screen	Gravel	3,000	325	825	154.
Kansas	Industrial	Open Hole	Sandy Dolomite	3,000	154	705	358.

An increase in drawdown, probably the most frequent sign of trouble, may be due to any one or a combination of several situations. Worn parts may be reducing the efficiency of the pump, in which case the corrective measures must be mechanical. However, accumulated scales and corrosion products also can reduce pump efficiency, in which case the most efficient corrective action usually is the application of chemical solvents.

Use of Chemicals for Increasing Production

The basic solvent used is hydrochloric acid containing non-toxic inhibitors, which protect the metal equipment of the well from the action of the acid. This solvent is capable of dissolving and removing most of the scale accumulations or corrosion products which may be encountered. Water-well scales usually consist primarily of calcium and magnesium carbonates, silicates, and hydrated iron oxides. But in the event that unusual compounds or conditions are presented, the properties of the basic solvent may be altered to fit the situation. Additive agents are available to intensify or retard the action of the acid, to decrease its surface tension, and to stabilize it against the re-precipitation of certain compounds which tend to be less soluble with a decrease in the concentration of the acid.

The treating technique is essentially the same on all water wells, even though unique situations may cause some alteration. No complicated hook-up is involved, and the well need not be off production for any extended time. When the pump is located at or near the water-producing zone, all of the solvent may be introduced through the pump. When the pump is located at a considerable distance above the producing zone, the solvent may be introduced through a hose or pipe, in order that it may be brought into immediate contact with the screen and formation. Where it is desired to force the solvent into the formation, a water flush is used. After a predetermined time interval, the well is placed back on production, the producing waters rapidly clearing the well of all traces of the solvent.

In the instance where the primary object of the treatment is to acidize the producing formation for the purpose of increasing its permeability, it usually is desirable to circulate at least a part of the solvent through the pump. This procedure will serve to clean up the impellers, even though no actual difficulty is being experienced where the pump is concerned.

Treating Techniques for Various Formations

When limestone wells are acidized, the size of the bore hole seldom is increased. What usually happens is that, as the acid is forced back into the formation, the pores and fissures are interconnected and the formation is honeycombed, which increases its permeability. When treating limestone formations, it is necessary to use relatively

large amounts of acid in order that the formation will be penetrated a considerable distance from the bore hole. Where the formation is almost pure limestone and is of low original permeability, it is sometimes necessary to use retarding agents. These agents are mixed with the inhibited acid and have the effect of slowing down the rate of reaction without affecting the amount of formation that can be dissolved. The use of retarding agents allows the acid to be pumped far back into the formation before it becomes spent. Other chemicals, such as wetting, foaming, and penetrating agents, also are used on certain types of limestone formations. An important consideration, which is frequently overlooked, is the choice of the correct acid concentration. If the concentration is too low, sufficient reaction does not take place, while, on the other hand, if the concentration is too high, the viscosity of the spent solvent can be so high that difficulty is experienced in returning the acid from the formation to the bore hole.

Although the problems of sandstone well treating are much the same as those of limestone wells, the technique is somewhat different. Sandstone formations as a rule consist of quartz or a silicious compound which is cemented with a calcareous material. In these formations, usually all that is necessary to increase their permeability is to remove the cementing medium. Large volumes of relatively weak acid are used on wells of this type since the ratio of soluble material to total material is low. However, there are some locations where the percentage of calcareous material is very low, and in these formations there must be an actual removal of some of the silicious formation in order to increase its permeability. As in the case of limestone wells, the bore hole is not necessarily enlarged. Rather increased production is obtained by opening the formation. For these silicious formations there are additive agents available which may be combined with hydrochloric acid so that actual reaction with the formation can be accomplished and its permeability increased by opening or creating veins.

Removal of Used Solutions

The handling of limestone and sandstone wells for removing spent solution and insoluble material oftentimes differs. In the case of limestone wells, the formation usually will clean itself by returning the well to normal production methods, since the purging of the spent solvent is assisted by carbon dioxide created in the formation through the reaction of the acid and the limestone. Sandstone wells, however, sometimes require assistance by "surging" the formation. This "surging" may consist only of alternately producing the well and injecting water down the bore hole. The forward and reverse flow of the water usually will flush out the insoluble material loosened by the acid, enabling it to be carried from the formation into the well.

A third classification of water producing formation is the type which goes under various names such as chert, conglomerate, or gravel. Formations of this type are so variable that it is impossible to set up specific treating recommendations for them until some experience is gained in each particular area. Usually the problem is only to remove some of the cementing material and thus to loosen the formation.

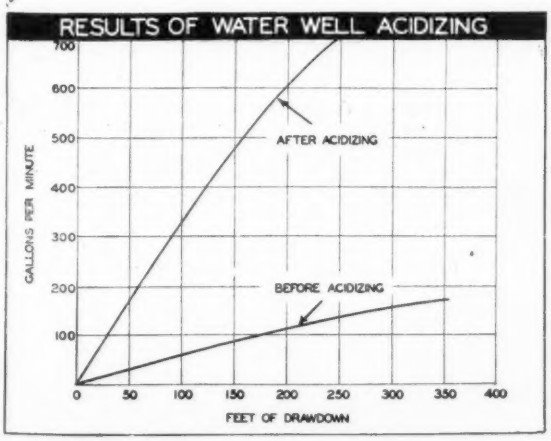
Other Treating Considerations

Most of the foregoing discussion has dealt with increasing well production through the use of acid on soluble formations. But, in a large percentage of treatments, the acid is never intended to enter the formation. Instead, the treatment is designed to clean the well equipment. Pump efficiency and capacity decline due to scale incrustations changing the contour of the impellers, plugging the ports, and creating friction within the flow. All of these ills can be corrected without the necessity of pulling the pump, through the proper use of acid solvents. Here caution should be observed. The pump is usually operated while the solvent is in the hole, therefore it must be determined whether the acid inhibitor affords protection to metals at high velocity. Furthermore, the limitations imposed on inhibitors for water-well use by taste, odor, and toxicity requirements narrow the choice to an extremely small field. Actually only one practical inhibitor has been developed to date which is economical and yet fills all of these requirements.

Through the use of chemicals most water-well pumping equipment can be cleaned in about four hours. Screens and gravel packs, which cause considerable trouble in some areas, also can be cleaned in a reasonable time.

Results of Chemical Treating

The result of the average water-well chemical treatment oftentimes exceeds the operator's expectations. It is not an unusual instance for a well to produce more water than when first drilled, or to produce at full pump capacity with little apparent drawdown, following the proper chemical treatment.



Left: It is possible that after acidizing a well it may be so improved that pumping-costs reduction will pay the costs of the work. Below: The water-well-treating scene shows the mobile equipment supplying the necessary chemicals and power.

Sewage Sludge Fertilizer Value

Growing tests give practical evidence of the sludge's fertilizing value.

WHAT are the economics behind sewage sludge utilization as a fertilizer rather than sludge disposal through an incinerator? Kerwin L. Mick, Chief Engineer and Superintendent of the Minneapolis-St. Paul Sanitary District, feels that he has the answer insofar as the Twin City special conditions are concerned. In a report to the District's Board of Trustees, he has shown the place this sludge can play in the agricultural life of the St. Paul-Minneapolis area.

Chief Engineer Mick's findings showed that the filter cake has a definite value as fertilizer at least equal to manure and is appreciated as such by the Division of Soils of the University, by the county agents, and by farmers who recognized the need for humus containing fertilizer such as this. The findings also established that issuance of a portion of the filter cake production free of charge to farmers results in a somewhat greater cost to the District per ton of sludge solids disposed of than if the entire production were incinerated. A comparative cost analysis estimates this to be 27 cents per dry ton or 8 cents per wet ton of filter cake.

The Minneapolis-St. Paul plant presents certain individual characteristics that set it apart from any other treatment plants. Its design has attracted much attention because of the chemical precipitation feature, which marks it as the largest plant equipped for chemical precipitation in the entire world. Nevertheless, this chemical precipitation feature is used rarely, since the requirements of the Mississippi River receiving the sewage are apparently met adequately by primary treatment alone thus far.

The plant also dewaters the sludge on vacuum filters after conditioning with an iron coagulant and lime without elutriation, and then disposes of the sludge by incineration. Thus the sludge cake available to the farmers is undigested from the primary treatment tanks only.

Fertilizer Quality

Study of the fertilizing quality of the sludge began in 1940 when the District interested the Division of Soils of the Minnesota Agricultural Experiment Station in conducting greenhouse tests and in supervising field tests. Encouraged by the results, the District allotted $1,500 to continue the study by the Experiment Station. One favorable preliminary report already has been issued, but the final report still has to be completed.

Farmers near the Twin Cities followed this work with great interest, several of them cooperating with the University in the growing tests. The District began a program of issuing filter cake to farmers who appeared with their trucks on schedules arranged through the county agents. At the request of the State Department of Health and to avoid possible health hazards, the filter cake has been supplied to farmers between October 1 and February 1.

In addition to the filter cake hauled by farmers, the District has hauled a total of 8,700 tons to shallow stock piles in the plant areas for use by residents of the Twin Cities after proper aging.

While the tonnage hauled during the last few years represents only about 15% of the sludge produced, nevertheless, its average of nearly 17,000 wet tons represents roughly 3,000 truckloads per year, considerably more than that distributed by other large cities not engaged in large-scale processed-fertilizer production.

A measure of the wet sludge cake as fertilizer can be obtained by comparing it to manure obtained from the South St. Paul stockyards.

The chemical analysis follows:

	manure	dry sludge cake
Nitrogen	0.7%	2%
Phosphate (P_2O_5)	0.2%	1%
Potash (K_2O)	0.7%	—
total plant food/ton	1.7 units	3 units (dry) 1 unit (wet)

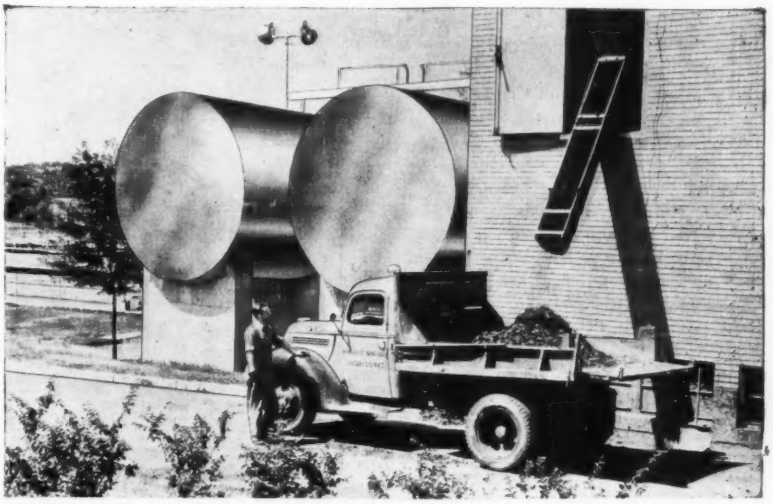
The Minneapolis-St. Paul Sanitary District summarizes the value of its primary undigested sludge

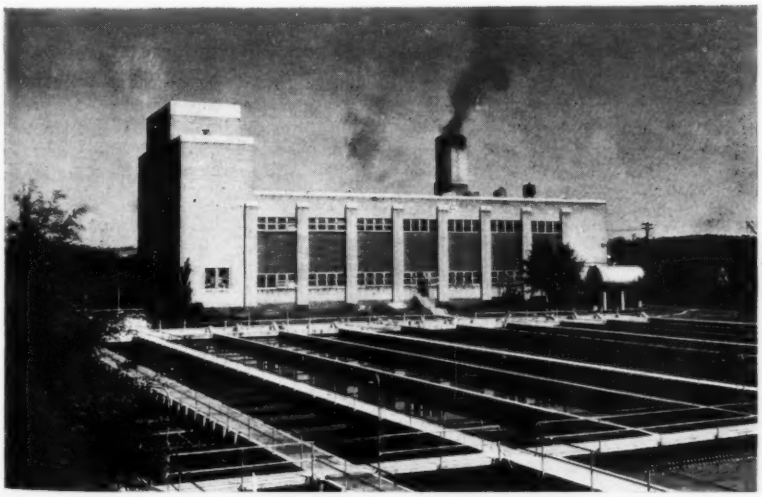
The stockyards have charged farmers 40 cents per ton for manure. On the basis of available plant food, the wet cake should have a value of 23½ cents per ton. Similarly, the stockyards make an additional charge of 25 cents per ton for loading the farmers' trucks by a crane, a total of 65 cents, which compares to an equivalent total charge of 38 cents per ton for the sludge loaded into the farmers' trucks. The manure, however, has the advantage of being less troublesome to spread or stockpile and having less bulk to haul per unit of plant food. The farmers also can obtain it without having to adhere to exact hauling schedules.

Another comparison showing the economics of the sludge cake is available through comparison with commercial fertilizers. The Minnesota Department of Agriculture's 1945 *Bulletin of Fertilizer Analyses* contains a table of estimated wholesale costs per unit of plant food for various commercial fertilizers. Out of 29 listings for 1945, 18 ranged between $1.00 and $1.50 per unit of plant food and 8 between $1.50 and $2.00, while only 3 exceeded $2.00. From this it appears that it was unnecessary for farmers to pay more than $1.50 per unit of plant food in the form of a concentrated dry fertilizer and would cost only a little more for hauling to the farm. Estimating trucking expense of 6 cents per-ton mile for hauling the cake in the farmer's truck, it appears that it would not be economical for the farmer to haul the filter cake a distance of more than 20 to 25 miles at the prices indicated, unless some additional value could be assigned to it because of its humus content, while the wet filter cake contains approximately 15% organic humus material in addition to the plant foods. Although no monetary values have been recognized for the humus content of fertilizers, the need for replenishing the humus content of soils is being recognized increasingly. Dr. C. O. Rost of the University of Minnesota School of Agriculture estimates that Minnesota soils have lost 42% of their organic content in the 100 years that they have been under cultivation.

These factors indicate that most of the farmers who have been hauling the filter cake would be justified in paying the District at least 20 cents per ton for the cake delivered in their trucks at the plant. The county agricultural agents agree with this conclusion and state that the farmers are convinced of the value of the cake and would pay a reasonable price for it. They did not believe the demand would fall off much because of any nominal charge the District might make. However, the demand is difficult to predict with any degree of certainty. The price of the crops would make the strongest gage of its use, they felt.

Some preliminary studies of the dry filter cake as a processed fertilizer have also been made, analyzing the possibility of producing a fertilizer suitable for bagging and selling for lawns and gardens and similar to Milorganite, produced by the Milwaukee sewage treatment plant. A group of engineers studying this hoped to construct a plant and to purchase a portion of the filter cake output. Preliminary cost estimates, however, were not favorable. In drying the cake, two tons of water would have to be evaporated for every three tons of wet cake, so the cost of drying is high; and the added cost of chemicals, which would have to be added to it to make it comparable to Milorganite as a plant food, result in an unfavorable economic picture.





Left: The Minneapolis-St. Paul plant, the largest in the world equipped for chemical treatment. Above: Loading the fertilizer is not difficult at this plant. It calls for a chute to by-pass the sludge on its way to the incinerator.

Indianapolis Begins to Clear Slums

How Indiana's capital city is helping private capital and industry to function in redeveloping slum areas*

By OTTO K. JENSEN
Executive Secretary
Indianapolis Redevelopment Commission

CITIZENS and officials of Indianapolis, like those of every other urban center, have done a lot of talking about slum clearance. Fourteen years ago some young men with an inclination for statistics and analysis compiled some rather elaborate figures to prove that slum areas cost these urban communities a great deal of money. A typical slum area was studied, and what disease and crime control cost the taxpayers was graphically set forth. If any one needed convincing, these figures proved beyond doubt that such areas are a real drain upon the rest of the community, to say nothing of the esthetic and humanitarian aspects.

What Indianapolis did about the problem at that time was very different from what it is doing today. That was the year 1933, and the Federal Government was just beginning to open the valves of the pipelines of federal aid. So, in common with sister cities all over the land, Indianapolis applied to Washington to ask that it be included in the list of cities to "make work" and prime the economic pump; a federal low-cost housing project for Negroes, built in one of the slum areas, was one result.

That type of slum clearance did not satisfy many people in Indianapolis, and some, who went a little more deeply into the problem, came out with the idea that while the Federal Government might demonstrate the need for slum clearance, it never could accomplish more than a token result. The more they talked, the more they believed that total slum clearance is a very big job and more slums would be cleared, and housing more soundly planned and executed, if every community would undertake to work out its own salvation.

Out of four years of discussion, culminating in the semi-official deliberations of the Mayor's Committee on Post-War Planning, ideas finally crystalized. In a word, these citizens concluded that there is a part for government—local government—to play, but that the main obligation rests upon private enterprise. They said, to keep their thinking clear, it's best to realize that slum clearance is not necessarily the same thing as new low-rent housing. The problem, they said, is primarily what a community should do about its blighted areas, and the best use of the blighted land was the goal to be reached. It appeared perfectly obvious that private enterprise would not be able either to obtain possession of all the land in such areas without some extraordinary powers that government probably should not confer upon private citizens; or to absorb the excess cost of the "improvements" on these blighted areas in preparing them for re-use.

Out of such thinking came the Indianapolis redevelopment law, enacted by the 1945 session of the Indiana legislature. No effort was made to repeal or amend this law by the 1947 session, recently adjourned.

Provisions of the Act

The method that was chosen under the Indiana Act was to provide for the acquisition of these blighted areas by a department of the city—the Indianapolis Redevelopment Commission—and for the clearance, replatting, and replanning of the areas and the resale of the land subject to appropriate restrictions. A special taxing district was created to levy taxes to pay the costs. The legislature did not enact a housing law, and, in fact, expressly forbade the Commission to build any new structures.

The Redevelopment Act is administered by five Commissioners, who are appointed by Trustees, who are in turn selected as follows: one by the Judge of the Circuit Court, two by the President of the City Council, and two by the Mayor. The Commission has the duty of designating "blighted areas" and making plans for redeveloping such areas.

When the Commission has by declaratory resolution selected a blighted area and has made appropriate plans for its redevelopment, these plans are submitted to the City Plan Commission for approval. Upon approval of the plans by the Plan Commission, the Redevelopment Commission then holds a public hearing on the question of the "public utility and benefit" of the proposed project to the taxing district. All persons who are taxpayers in the taxing district or who are in any manner affected by the proceedings may file remonstrances and appear and be heard on all questions before the Commission. An appeal is granted to the Superior Court, for the purpose of giving remonstrators the right to contest the reasonableness of the Commission's finding on the usefulness or value of the proposed project, i. e. its "public utility and benefit" to the residents of the district.

If the finding of the Commission that a project is of "public utility and benefit" is affirmed by the Judges of the Superior Court, the Commission may then proceed to acquire the land by purchase or, if necessary, by condemnation. The Commission may exclude certain of the property from the plan if, in its opinion, this exclusion will not interfere with the redevelopment of the area.

Owners of property within the area, if their property is not excluded by the Commission, and if they are unable to agree with the Commission on a fair purchase price, may, of course, defend any condemnation proceedings on any proper grounds or may question only the value to be placed on their property. After the property has thus been acquired, it is cleared and sold under the provisions and limitations provided by the statute.

The Act is limited in its scope to ridding the city of a blighted area and providing a plan for redevelopment of the area. The redevelopment is actually completed by those who repurchase for use. The law also permits acquisition of land by other departments of the city for its lawful purposes.

Progress Under the Act

For the past eighteen months, our Commission has inspected seven or eight of the blighted areas of Indianapolis and selected one of these areas for intensive study. This area is known as the Fall Creek Area; it lies within one and one-half miles of the center of our city, and it is considered the city's largest and worse blighted area. The area consists of 178 acres, its population is 1,648, and it is almost exclusively populated by Negroes. Our first step was to contract with one of the title companies to furnish us with the name of the record owner, the correct legal description, the date of the plat, where and when recorded, the type of conveyance by which the record own-

* Address delivered at the 1947 National Planning Conference of the American Society of Planning Officials, in Cincinnati.

er obtained title, assessed value of land and improvements as well as other pertinent information. These reports numbered 557, and cost the Commission $557. Our next step was to take an inventory of what was in the area; this included an inventory of underground utilities, streets, and structures as well as people.

Three appraisers were employed to work independently, and to furnish the Commission with a detailed report on each of the 386 structures in the area, two photographs of each structure, and each appraiser's judgment on the value of each lot or tract and improvements, if any. The appraisal work was done for total fees of $5,343. The total appraisal value of the area is $875,000, compared to an assessed value of $504,000.

Flanner House Studies

The necessary social and economic studies were conducted for the Commission by the staff of Indianapolis's famous Flanner House, a Negro settlement institution. As stated in the introduction to its report, "the purpose of this study is to provide an analysis of the families residing in the area under consideration for redevelopment by the Indianapolis Redevelopment Commission. This analysis will attempt to provide answers to some of the questions with regard to the nature of families, their background, their present occupational and economic status, their housing and living situation, and some understanding of their health and life in the community. . . " The report submitted covered 139 pages, and included 93 separate tables. This work was performed for a cash outlay to the Commission of $565.81.

Lawrence V. Sheridan, of Indianapolis, well known as a city planner, was retained to make necessary land-use studies, to prepare all plats and maps and to prepare the plan of redevelopment as well as the specifications for it. He worked with other city departments and ascertained the needs for parks, playgrounds, flood control work, boulevards, and lands for extension of recreational facilities for Crispus Attucks High School.

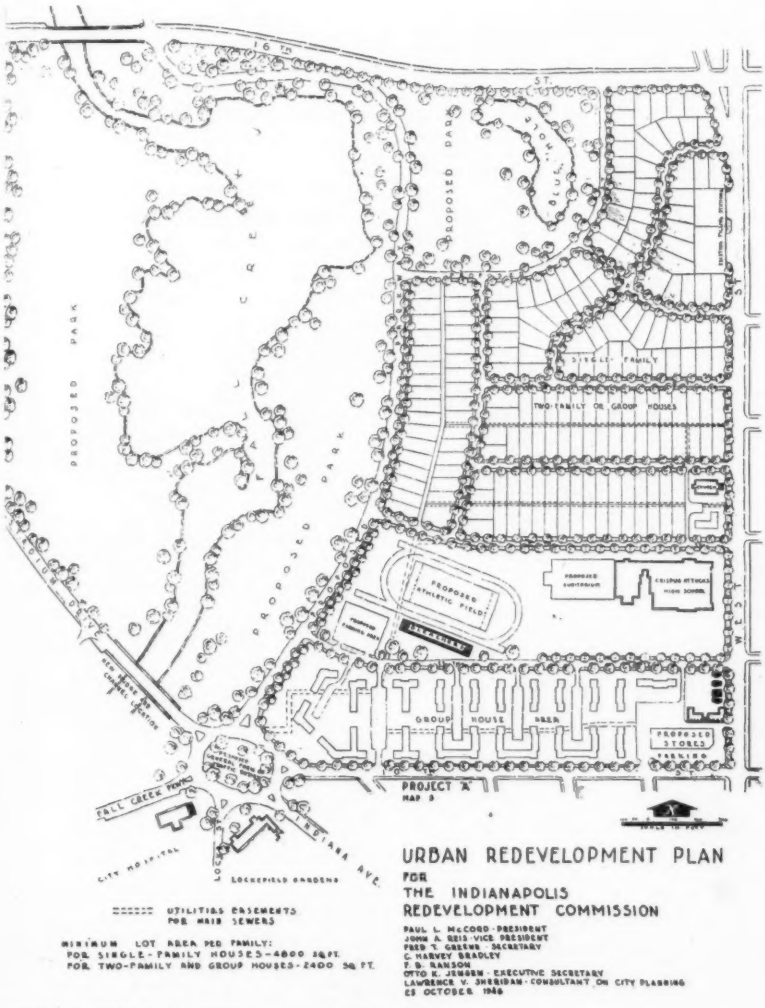
By declaratory resolution adopted by the Commission on November 6, 1946, this area which had been under study was declared to be blighted; the resolution and plan for redevelopment were submitted to the City Plan Commission for recommendation and approval. The approval was given on November 25, 1946, and published notices were given to the taxpayers of the redevelopment district of a public hearing which was held on January 2, 1947. Fourteen written remonstrances were filed and all parties desiring to be heard were heard; the objections were reviewed by the Commission, and on February 5, 1947, its confirmatory resolution was adopted.

Recent Court Approval

The signers of nine of the remonstrances took an appeal to the Marion County Superior Court within the ten-day statutory period. All appeals were consolidated and heard as one cause by the five judges of the Court. Twelve days were taken for the trial, and on March 17, the Court by a four-to-one decision held that it would be of public utility and benfit to acquire the blighted area in question for the purpose of redevelopment. No appeals have been taken from the judgment of the Court.

The Commission is now engaged in negotiating with the owners for the purchase of property. We have been having satisfactory success in these negotiations.

After acquisition, we will clear and



Left: Plan for the first area to undergo redevelopment in Indianapolis. Below: A view of housing conditions as they exist in this area of Indianapolis today.

prepare the tract for our redevelopment program and be ready to sell to individuals for development. The Commission has received many inquiries from firms and individuals who are interested in acquiring land in the area, some for investment purposes and some for home sites.

The funds available for use of the Commision are the proceeds of a 10-cent tax on each $100 of taxable property within the city. This produced in excess of $553,000 in 1946, and the same levy was made for collection in 1947. In making these levies the Commission did not receive a single objection from taxpayers. All receipts from sale of lands to private capital and other city departments, rents, etc., are placed in the redevelopment fund for use in clearing other blighted areas.

Now, while all these steps have been taken, it does not mean that this blighted area will be transformed into a garden spot tomorrow. The existing housing shortage has caused the Redevelopment Commission to assure all persons living in the area that none will be displaced until other places to live have become available to them.

An interesting side-light is that a philanthropic group of Indianapolis citizens, plus the American Friends Service Committee and Flanner House expect to acquire part of the area and use it for an experiment in self-help housing modeled on the Penncraft, Pa., plan. Low-income families in Penncraft have exchanged their own labor in building new, modern homes, which they can eventually own at considerable savings.

I should like to point out again that ours is a redevelopment law and not a housing law. It is not our thinking that all low-income families can be housed in new houses, nor that all the families now residing in the area will return to the area after it is redeveloped. We believe that many families now living in the area and many of like circumstances outside the area are definitely interested in the program and will endeavor to acquire parcels of real estate. We believe that families of the middle- and higher-income groups will be interested in acquiring home sites in this area, which will offer many of the advantages that make up an attractive, liveable neighborhood.

We believe we have the answer for our city, and that the problems to which we have set ourselves may be solved to the complete satisfaction of our citizens. We are glad that we are past the "talk stage" and are in action.

Woman City Manager in San Juan, P. R.

THAT women, too, have a place in the municipal-management profession was demonstrated by the appointment last December of Mrs. Felisa Rincon de Gautier as city manager of San Juan, capital of Puerto Rico, a city of more than 200,000. The appointment can be considered even more noteworthy when it is remembered that woman's suffrage in Puerto Rico has existed only since 1932.

Facing a host of difficult and complex problems upon taking office, Mrs. Gautier's major administrative efforts have been directed toward solving the most urgent and pressing of these—providing municipal medical services and schools and instituting programs of sanitation, slum clearance and rehabilitation, and street construction and repair.

In her campaign to clean up the city, Mrs. Gautier has laid special emphasis on the role of civic education. She has appealed especially to the women for cooperation in helping to promote civic consciousness, and for their aid in improving the home and its environment.

Politically Active

Mrs. Gautier is the wife of a prominent lawyer and legislative official in Puerto Rico, whom she married in 1936, and has had ample political experience for her job. This is only fitting, as the functions and duties of a city manager on the island are considerably more political in character than those of a city manager in the United States.

The political career of Mrs. Gautier began in 1932, when she gave up her business as owner of a chain of dress shops, and became a member of the

Mrs. Felisa Rincon de Gautier

Board of Directors and chairman of the Finance Committee of the Liberal Party. In 1937, the Liberal Party split, and she helped organize the Popular Democratic Party (currently in power) under the leadership of Luis Munoz Marin. She is now a member of the Board of Directors of the Popular Democratic Party and chairman of the Municipal Committee of the party in San Juan. Her popularity is attributed in large part to her unselfish services and her aid to hundreds of destitute people in the city.

At the Party convention in San Juan for the last elections, Mrs. Gautier was chosen as the only candidate for the city manager position, but for personal reasons she did not accept the nomination. Last December, upon the resignation of the city manager, who had been appointed, she was again chosen by the party as its only candidate, and subsequently appointed to the position by the Board of Commissioners to fill out the unexpired term.

Detroit Enacts Off-Street Parking Ordinance

ONE of the most comprehensive ordinances of its kind, the off-street parking facilities amendment to the Detroit zoning ordinance, which became effective September 4, represents several years of study and effort by the City Plan Commission.

An unusual provision of the ordinance is the designation and exemption of "BC districts" from compliance with its requirements. George F. Emery, director of planning, explains that the BC districts cover the central business district and a small part of the new center business area around the General Motors and Fisher Buildings. The ordinance was not made applicable to the BC districts for two reasons: First, land values are too high, and any requirement for parking facilities for each building would disrupt the continuity and integrity of a concentrated business area; second, adequate parking facilities are or can be supplied by commercial parking lots or parking garages and public-parking facilities.

Copies of the Detroit off-street parking ordinance may be obtained upon request to the City Plan Commission, 9th Floor, Griswold Bldg., 1214 Griswold St., Detroit 26, Mich.

Above, left: One of Barre's hill streets during one of the worst blizzards in recent years. Right: The same hill a short time after the application of rock salt. The hard-packed snow and ice are rapidly disappearing from the highway.

Barre Cuts Snow Costs in Half

By THURMAN W. DIX
Street Superintendent
Barre, Vt.

RECENT cost estimates show that the City of Barre cut its annual snow removal bill approximately 50% last winter by using rock salt instead of abrasives on the streets. Because of the success of that program, the city is making plans to repeat it during the coming season.

Located in the Green Mountains, where rapid weather changes keep street department crews continually on the jump, Barre was one of the first communities in the state to spread rock salt on its streets. That was 10 or 12 years ago, and we have used it every year since then. We have found that with enough of it, and with sufficient machinery, all ice and snow can be cleared from the streets, and the use of abrasives is not necessary. During one particularly bad storm last February, for example, our men went to work about 8 o'clock in the morning. Between 1 and 2 o'clock in the afternoon, the streets were completely bare.

On another occasion, a sleet storm struck the city on the same night that one of the most important social events in the state was being held in the nearby state capital. Motorists by the hundreds took to the highways. We dispatched crews immediately to spread rock salt on the hill streets and main thoroughfares. The next day people stopped me on all sides to tell me how lucky I was that the weather had moderated. They did not realize that the weather had not changed a bit, and it was our quick work with rock salt that had kept the highway open.

With our new methods of snow removal, we find that we save labor and money in a number of ways. For one thing, a bushel of rock salt weighs somewhere between 40 and 50 pounds, while a bushel of abrasives will tip the scales between 130 and 140 pounds. In addition to that, the rock salt will go a lot further than the same quantity of abrasives. As a result, if you are caught with a bad storm you can treat so much more road surface in much less time because rock salt is light and because it goes further. In an emergency, one truck load of rock salt can cover as much mileage as five truck loads of abrasives. It is easier to handle and it can be spread more quickly.

Added to that is the fact that, instead of just covering up snow or ice and forming a rutted ice mat, rock salt provides bare streets for motorists shortly after we apply it. And whereas abrasives have to be spread repeatedly during a prolonged storm, generally one application of rock salt is sufficient to get bare streets. After heavy snowfalls we plow, but for light snows and sleet storms, rock salt alone is enough to clean the streets. It works down through ice and packed snow quickly, lowering their temperature to well under 32 degrees. If snow has packed, rock salt works down through it quickly, forming a weak brine on the surface of the pavement which undercuts packed snow or ice and breaks the bond.

Another saving springs from the fact that when abrasives are used, there is the additional and expensive job of sweeping them off the highways and clearing out sewer basins. With our system we have no worries about that.

This winter we are planning to try a new experiment: that of extending our present ice-removal methods to include downtown parking areas. In the past, crews of laborers had to go to work with pick and shovel on ice accumulations, blocking parking areas in the business district. Our new plans call for rock-salt treatment of these areas.

Growth of Publicly Owned Electric Utilities

THROUGHOUT the nation, there are some 3,400 cities now served by electric systems owned by municipalities, cooperatives, or public power districts, the American Public Works Association reports. Nebraska and Tennessee are the first states to have all electric utilities publicly owned. Last year an estimated 100 or more cities brought or created municipal electric utilities, following an increase of 110 cities in 1945. Greatest concentration of publicly owned electric facilities is in the Tennessee Valley states, the Middle West, and states bordering the Gulf of Mexico.

Tennessee has more cities served by publicly owned utilities than any other state — approximately 374. Nebraska is second, and Iowa third with 147 cities served. Publicly-owned electric utilities serve 146 cities in Kansas, 142 in Texas, 140 in Ohio, 137 in Minnesota, and 129 in Alabama.

Sewer Maintenance Organization

Dayton, Ohio, outlines a program to keep sanitary and storm waters under control

By JAMES H. DOWLING
Superintendent of Sewers
Dayton, Ohio

THE DIVISION of Sewer Maintenance is a part of the Department of Water. It is a complete working unit in itself. Its personnel includes the superintendent, two clerks, one supervisor, five foremen, one building tradesman, one stock-keeper, one handy man, two emergency men, one compressor operator, three truck drivers, three repair men, one night watchman, and from twenty to twenty-five sewer cleaners and laborers. Hence, its normal operating force is from 40 to 45 men.

Maintenance and Repairs

The five sanitary ejector stations are visited once each day of the year and are oiled, greased, and checked for proper functioning. There are five storm pumping stations which are operated once every month and kept in readiness for any emergency, such as rivers rising in excessive rain.

Sanitary and storm-sewer main lines, manholes, and all catch-basins and drips are checked and cleaned on a constantly revolving year-round schedule, or cleaned immediately following emergency calls.

The concrete catch-basin castings seen in the curbs and gutters throughout the city are constructed by this division, as are the more rarely seen concrete manhole covers. When any of these sewer installations breaks down or, as in the case of surface installations, are damaged by vehicles, they are repaired as soon as possible by this division.

The Division of Sewer Maintenance checks and keeps in operation traps located on main-line sewers throughout the city. These traps are used when it is necessary to siphon the sewage under a water main, electric conduit, or perhaps a large storm-sewer line. Flap valves located in sanitary manholes are greased and oiled periodically so that they will function properly at all times. These flap valves are installed to carry away overloads in the sanitary sewer lines, and to by-pass them into the storm-sewer system.

The emergency crew, normally consisting of a foreman and two helpers, operates a truck equipped with Flexible Sewer-Rod equipment, fire hose, shovels, picks, lights, telegraph spoons, and other miscellaneous sewer equipment. The crew is subject to call 24 hours a day, 7 days each week. Included in its work is the clearing of stoppages in sewer mains and cleaning and disinfecting basements of private homes which become fouled due to a stoppage in the flow of the main line. It lights and barricades overnight all broken sewer installations which may endanger pedestrians and motorists. In general, it is the trouble shooter for everyday complaints, even to the rescuing of pets and personal articles from catch-basins.

The catch-basin crew normally consists of 1 foreman, 2 loaders, 10 sewer cleaners, and 2 dump trucks. Eight months of its working year is spent in cleaning catch-basins on storm-sewer lines, manholes, and drips throughout the city, until each one of these installations has been checked and cleaned.

All debris and dirt removed from these installations is hauled to the dumps. During the winter months, the crew overhauls, checks, and greases the city's pumping stations so that they are ready to handle the spring rains. There are 15 major storm ditches or open sewers which carry surface water to fields or to the river. These, too, are kept free of debris and obstructions by the catch-basin crew. The sewer-cleaning crew varies from 8 to 16 men, including foremen. The crew operates the division's two power-driven sewer-cleaning machines. These are modern pieces of equipment mounted on trailer trucks with knee-action, air-tire wheels. Mounted are steel drums with a cable capacity of 750 feet, gasoline-powered, enclosed engines, and miscellaneous tools and equipment including various sizes of expansion buckets for cleaning different size storm-sewer mains. Some of the city's storm-sewer mains are too large for these machines to clean effectively, in which case the work is done by hand with the use of shovels and wheelbarrows. Also in the line of modern equipment operated by this crew is a Flexible Sewer-Rod unit mounted on a two-wheel trailer. With various tools such as corkscrews, cutters, and augurs that can be attached, this unit is used effectively in removing tree roots from main-line sanitary sewers. The crew also uses two portable electric light generating plants for work in large sewers at night and keeps two Homelite pumps ready for emergency use.

There are three repair crews, each consisting of a repair man and an assistant. These men are cement and brick masons in their own right and construct and repair manholes, catch-basins, drips, and other types of sewer installations. They also lay sewer lateral lines and open sewer stoppage in main lines on paved streets for plumbers. They replace sidewalk and curbing around sewer installations, and also street paving, following dig-ups by the division.

The Bureau of Sewer Permits and Inspections, located in the Municipal Building, is a part of the Division of Sewer Maintenance. It is composed of three sewer inspectors, one having charge of the office, and the other two making daily sewer inspections. This office issues sewer and water permits to plumbers and contractors, keeps up-to-date maps of the city's underground system, and issues information to plumbers contemplating sewer work.

Comparison of Old and New

At this point, let us compare the merits of our modern methods of sewer cleaning with the old methods. Under the old system of cleaning, a man underground would push wooden rods 200 feet or more through the sewer to the obstruction and dislodge the stoppage. He had no vitality left to force tools the size of the pipe around the roots or dirt and completely clean the line.

The flexible steel sewer rod with a power drive has eliminated the wooden rods formerly used and in only one instance has it been necessary to dig up a street where the flexible sewer rod would not open the line. Several instances of broken pipe and possible infiltration have been discovered and the exact spot to dig has been found through the use of flexible rods.

Another improvement in this Division was the purchase of two Champion

Power Sewer cleaning machines. Before getting this machine, main-line cleaning was quite an expensive and slow job. By using the Champion Power machine we have cleaned 30-inch vitrified pipe, two-thirds full, at a cost of 11 cents a foot, while our records show that with old hand-power machines the cost exceeded 60 cents per foot. This saving is made possible because the machine removes the dirt from the sewer and places it on a pile all in one operation. The Champion is powered by two gasoline motors, and it has an automatic device for clutch release in case of trouble inside the sewer line. The cost of fuel for operating the two motors of 7 hp each is one gallon of gasoline for a working day of eight hours.

Each working man in this Division is supplied with a raincoat, rainhat, and rubber boots to fit, for use during inclement weather. The possessor signs for these items and must return them to the storeroom after his return from a job. A Mine Safety Appliances gas mask is also available to any of the crew for protection from the hazards of gas, stench, etc. Goggles or face-shields must be worn by men operating air hammers when cutting concrete, stone, or brick. Each truck is fitted with a canopy to protect the men going to and coming from their jobs. This has been found to be beneficial, since it eliminates delays in moving and hence is a time-saving factor. In our garage, washstands and showers are at the men's disposal, if they desire to clean up before going home.

So much for our maintenance and operating equipment. Let us analyze now our city's network of pumping and ejector stations. Dayton, Ohio, is situated in the Miami Valley on the banks of the Great Miami River. The Great Miami, flowing through the heart of the city, is fed by its tributaries, the Mad River, the Stillwater River, and Wolf Creek. Since the contour of the ground in the suburbs adjacent to the river is lower than in the central part of the city, it was necessary to install ejector stations to raise the flow of the sanitary sewage from one point to another, a higher point. This is necessary so that the sewage will flow by gravity to the three 36-inch interceptors and across the Great Miami to the pump house, where it is again raised and forced to the Sewage Disposal Plant, located southwest of the city.

Five ejectors, located at various points in the city, are required to do this job. Namely, they are:

Equipment of Ejectors

A Shone Pneumatic Sewage Ejector, with two 600-gallon capacity pots, is located on Webster Street, north of the Mad River, to take care of sewage in the northern part of the city. This sewage runs through two 12-inch and one 15-inch line into the pots of the Webster Street ejector. From these pots, it is raised by compressed air and siphoned through two 24-inch iron pipes installed in the bed of Mad River, to the opposite side thereof, thence into the Patterson Boulevard 60-inch relief line.

The Floral Avenue Shone Pneumatic Sewage Ejector is equipped with two 350-gallon capacity pots; they discharge the sewage by compressed air from Riverdale into a 24-inch cast-iron relief line, and across the bed of the Great Miami into the Wilkinson-First Streets relief line.

The Helena Street Ejector (wet and dry well), is equipped with two American 10 by 10 S. L. Pumps, 2,770 gpm and is driven by 40-hp Westinghouse motors.

The Stegman Street Ejector (wet and dry well), is equipped with two 5-inch Fairbanks-Morse Pumps, driven by 10-hp Fairbanks-Morse motors.

The Patterson Park Ejector is equipped with a 50-gallon pot. Its present motor power is inadequate, owing to the recent construction of many new homes, which have overloaded it. However, plans are on file for a new station to be erected in its place.

For the protection of our citizens during heavy rains or a rise in our rivers, there are six storm-sewer pumping stations located at various points in the city. These are equipped with either two or three vertical centrifugal pumps with 50-hp induction motors, Westinghouse made, 2,300 volts. One of the smaller stations servicing the west side of the city, Germantown Street Station, is equipped with two 14-inch horizontal centrifugal pumps (Platt), each with a capacity of 4,200 gallons per minute, and driven by two 40-hp Westinghouse motors, 860 rpm, 220 volts. The McCook, or North Bend, storm-sewer station is equipped with three Worthington Pumps, 16-M.C.—1—Mixflo, G.M.P. 6,000, driven by 40-hp Worthington motors.

In 1913, the year of Dayton's great flood, 600 people were drowned and thousands left homeless. Damage to property by water and fire was almost beyond estimate. Subsequently, $30,000,000 was spent in the building of dams and the acquisition of ground to protect the city from another catastrophe such as it experienced in 1913. Now, Dayton is well protected and has easily withstood many floods which have ravaged surrounding towns.

Slabs for catch basins being precast at the workshop.

Dirt removed from a 30-inch pipe in four hours.

The "Public Reserve Area" as a Zoning Device

Washington cities preserve their natural beauties for public use

By JOSHUA H. VOGEL
Planning Consultant
University of Washington
Seattle, Wash.

THE Public Reserve Area is the outgrowth of many ideas and developments. As long ago as 1837, according to a 1945-46 report from the city of Adelaide, Australia, the city planners of the time kept in reserve for public use areas which later became known as "park lands," and which today add the beauty of a green belt to the city's plan.

The writer has long advocated the development of "primitive" areas in the heart of a city as something more natural and attractive than an expensive formal park. The idea of a Public Reserve Area is original in the sense in which it was developed in the cities discussed in this article. Such an area, with or without buildings, is reserved by zoning ordinance for public and semi-public uses. The purpose is to hold the area in reserve until the city had need of land for public use.

Areas similar to the Public Reserve Area were already in existence. Seattle has two natural parks with much of the growth preserved, and with the addition of only a few necessary access roads and concealed rest rooms. The King County, Wash., Zoning Ordinance, which the author wrote, included a Forest Recreational Area to protect the beautiful natural resources which the state has in abundance and which attract tourists from all over the world.

A zoning ordinance of the type prepared by the writer has been adopted, with some necessary changes, by the Washington cities of Vancouver, Sedro Woolley, Camas, Bellingham, and Raymond. The first city to use it was Sedro Woolley, which adopted it in April, 1942, and which set up two Public Reserve Areas. A similar ordinance, prepared for Vancouver, included a greater number of districts because of the metropolitan character of Columbia River's largest port city. The section pertaining to the Public Reserve Area District is as follows:

Public Reserve Area District

In the P-1, Public Reserve Area District, no building or premises shall be used and no building shall be hereafter erected or structurally altered unless otherwise provided in this ordinance, except for one or more of the following uses:

1. Governmental buildings and uses, Federal, State, County, Municipal or other governmental subdivision.

2. Hospitals and sanatoriums, public and private, except those for inebriates, insane, or mental diseases, subject to regulations of the Health Department.

3. Institutions for educational, philanthropic or eleemosynary uses.

4. Libraries, art galleries, and museums.

5. Parks, playgrounds, tennis courts, and like recreational uses.

6. Private clubs, fraternities, and lodges.

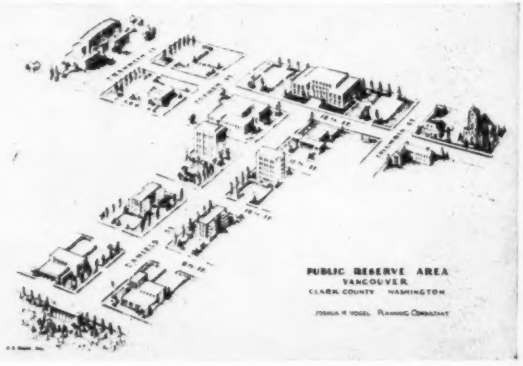
7. Professional service offices, such as for doctors, dentists, etc.

8. Residential hotels.

9. Schools, public and private.

This area is reserved for public and semi-public uses. All display of merchandise or products, all advertising devices and any manufacturing is prohibited. Buildings requiring services such as food, drugs, cigars, etc., usual to a public building, office building or hotel, may contain same within the interior. Entrances from street must not display advertising on same. Street deliveries are prohibited for certain designated hours or building shall be so designed as to facilitate unloading fuel and merchandise from vehicle placed in alley, driveway or loading area on private property.

All structures contemplated for this district must first have plans, specifications,



Right: The "public reserve area" for the city of Vancouver, which plans to purchase certain areas for the city hall and fire station. Other tracts are owned by the county, and one of them is the site of a juvenile court house. The privately owned parts of the area are subject to restrictions designed to preserve and enhance their attractiveness.

and uses approved by the planning comcission, and said plans and stated uses are to be filed with the permit. The planning commission is charged with the responsibility of ascertaining that the architectural design, the yard width, the landscaping, etc., shall conform to the adjacent developments to achieve a civic center for the City of Vancouver.

FRONT YARD: There shall be a front yard having a minimum depth of 15 feet along 12th Avenue and along Daniels Street. In case of corner lots at 12th and Daniels, both streets are front yards and shall have a minimum width of 15 feet.

SIDE YARD: There shall be a 5-foot side yard on interior lots, and in case of corner lots, 10 feet wide on flanking streets.

REAR YARD: No rear yard is required except where a Public Reserve Area District abuts on a Residential District with no intervening street or alley, in which case 10 feet is required.

HEIGHT LIMIT: Height limit shall be 8 stories, excluding necessary elevator pethouses.

The site zoned in Vancouver, as shown in the accompanying illustration, is only partly vacant, but it is an area marked for redevelopment. Certain areas, especially near and at the Esther Short Park, would be purchased by the city for the city hall and the fire station. Certain tracts are now owned by the county, upon which they are building a juvenile court house; other portions are to be acquired by the county. Certain corners, especially where the high buildings are shown in the smaller illustration accompanying this article, are owned by private individuals; and the plan and exterior design of their projected buildings were used in this sketch.

The zoning ordinance requires that the owners of private property must have their plans accepted before they can develop their property. It is proposed that the site be made attractive enough so that the public will approve the purchase of land in the area for a civic auditorium and library, or that some public agency, such as a parochial school, might buy a tract of land. In any case, the architect's plans must meet with the approval of the Planning Commission.

Other cities are considering the insituation of such areas in their zoning ordinances to protect their civic center areas.

Many of our planning procedures and financial programs are the result of the combined thinking of the local citizens. The local planning commissions determine their city objectives. Then, with the help of the planning consultant, the method for accomplishing the desired plan is developed. Credit should be given to the members of the commissions in our Washington cities who have adopted the idea of the Public Reserve Area District. It takes years of activity on the part of the citizens, however, to safeguard the plan until the value of it is accepted by the whole community.

Ohio Adopts Rural Zoning

By JAMES METZENBAUM

I

ALMOST 30 years ago, Ohio—in company with other states—passed a law giving the right to cities and villages to adopt zoning ordinances which would regulate the height of buildings and the creation of zones for industry, for retail business and for residences.

II

Now, Ohio has taken another long-wished-for step. It has extended to counties and townships the right to enact similar zoning ordinances in their unincorporated areas. The drive during the last session of the Ohio General Assembly marked the tenth time an attempt had been made to obtain such legislation, and was the most concerted one ever made during the historic struggle for such a law in the state.

Representative Charles P. Baker of Painesville, Ohio, and Representative J. E. Simpson of Forest, Ohio, sponsored this act, which became effective September 25. Much of the credit for passage of the bill should also go to Representative Fred J. Morr, who gave unsparingly of his time for its promotion, and who marshalled the forces of the professional planners and county commissioners in working on the bill. Mr. Morr is state-county zoning chairman of the Ohio Planning Conference, with which the Ohio Farm Bureau and Grange and many other organizations cooperated in supporting the bill, a commissioner of Hamilton County, and a member of the Regional Planning Commission of that county.

The rights of property owners under the new act will be amply protected, as they should be here in America. Without delineating each step, the following is a description of the major provisions:

First, it will be necessary for the county commissioners to adopt a resolution of *intention* to enact a county zoning ordinance.

Then, they will be required to create a *County Rural Zoning Commission* of five members, to serve without pay.

After study, that zoning commission will be required to submit a zoning plan for public inspection.

Thereafter, the "County Rural Zoning Commission must hold at least one public hearing in each Township affected by the proposed Zoning Plan," with notice thereof published "at least thirty days before each hearing."

When the County Rural Zoning Commission finally lays its plan before the county commissioners, they, also, are required to hold a public hearing, after giving thirty days' newspaper notice.

Then, if the county commissioners approve such plan, "the question of whether the proposed zoning shall be put into effect shall be submitted to the electors residing in the unincorporated area of the county included in the proposed plan of zoning, for their approval or rejection at the next primary, general, or special election. No county zoning regulations shall be put into effect in any township, unless a majority of the vote in that township is in favor of the proposed plan."

Thus, no zoning plan can be hurriedly forced upon any county or upon any part thereof.

After the adoption—by vote of the townships affected—the county commissioners appoint a simply constructed *County Board of Zoning Appeals* for five members who must reside in the townships covered by the zoning plan.

That appeal board is necessary in order that property owners may appeal from a refusal to grant them a zoning certificate. The appeal board may also grant such necessary variances that injustices may not be done to anyone.

III

Any township, likewise, may adopt its own zoning regulations, and if it does, then if the county later adopts zoning, that township may decide whether it wishes to go under the county regulations or retain the zoning it has patterned for itself.

The protection for the property owners is equally good, and the procedure is even a little more simple if a township works out its own zoning program.

Finally, there is an advantage for townships to take early steps for themselves.

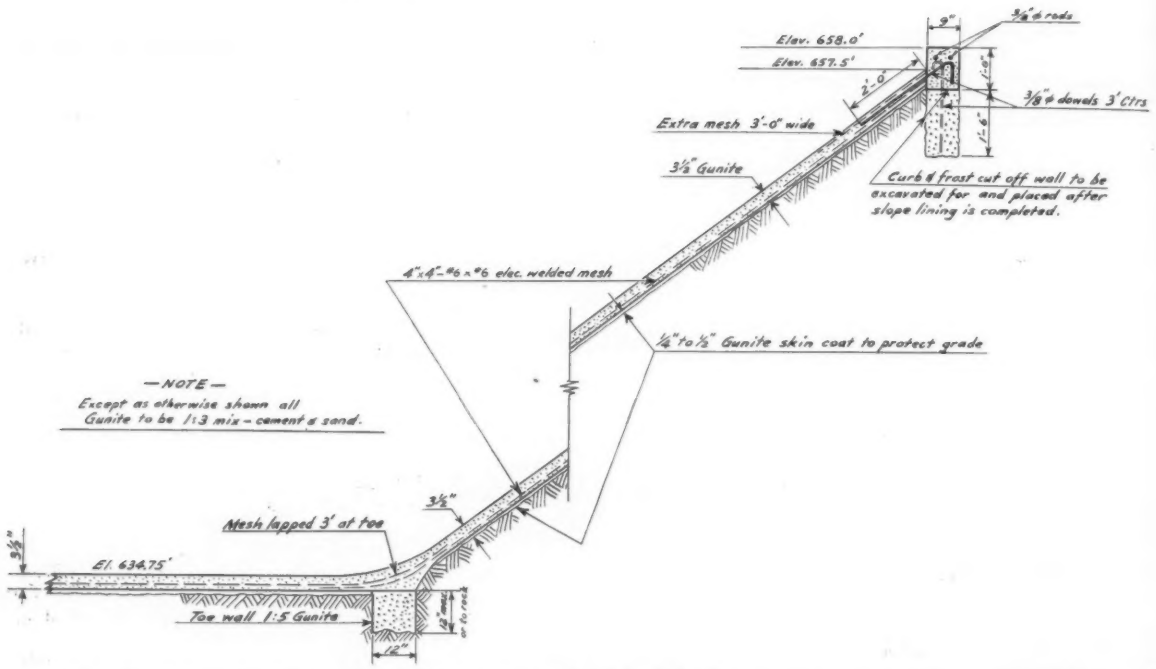
IV

No such zoning—whether by county or town—will affect farming, horticulture, dairying or the like, nor will it wipe out any now-established business or uses.

This new law should be good news to the rural folk of Ohio, for it will give them the right to protect their homes, their farms, and their business property from future invasion by harmful uses and unwanted intrusions.

EDITORIAL NOTE.—Former Ohio State Senator James Metzenbaum of Cleveland, author of the foregoing article, served in 1924 as attorney in the Euclid Village case which resulted in the validation of zoning by the Supreme Court of the United States.

Charlottesville Boosts Water Supply


9"
3/8" ø rods
Elev. 658.0'
Elev. 657.5'
2'-0"
1'-6"
3/8" ø dowels 3' Ctrs
Extra mesh 3'-0" wide
1'-6"
3½" Gunite
Curb & frost cut off wall to be excavated for and placed after slope lining is completed.
4"x4"-#6 x #6 elec. welded mesh
¼" to ½" Gunite skin coat to protect grade
—NOTE—
Except as otherwise shown all Gunite to be 1:3 mix - cement & sand.
3½"
Mesh lapped 3' at toe
3½"
El. 634.75'
Toe wall 1:5 Gunite
12" min or to rock
12"

Details of how the base and side slopes of the Charlottesville clear-water reservoir were constructed.

. . . by building a new 430-million-gallon dam and a 2-million-gallon storage reservoir

AT THE foot of the Blue Ridge Mountains, some 15 miles northwest of Charlottesville, Va., is a new dam impounding 430 million gallons of water flowing out of the Moorman's River, a dam big enough to take the low point of this city's year-round water supply curve.

In the city you will find a new 2-million-gallon storage reservoir set high enough on a hill so that it can float on the city's distribution system.

This new dam, a curved structure of the gravity type, has a spillway length of 225 feet and a total top length of 500 feet. Its maximum height from the foundation is approximately 80 feet or about 65 feet above the natural ground surface. It backs up water in Moorman's River to cover about 44 acres.

Moorman's River is and has been the primary source of supply for the city of Charlottesville, although two smaller reservoirs can be called on in an emergency. The present 15-mile pipeline is continuing to bring the water to the city's filter plant, and any excesses are diverted into these two reservoirs some

Charlottesville's new clear-water reservoir under construction. Note the 5-foot square concrete tunnel through the fill at the bottom of the basin. The outlets and drain pipes are placed here, for easy access to all piping.

four miles outside of Charlottesville.

This mountain reservoir water, pure and unpolluted, requires virtually no treatment, and the existing filter plant, of the old slow-sand type, continues to give sufficient treatment so that only the addition of chlorine is required.

The new clear-water reservoir stores this filtered water and supplements the present one-million-gallon reservoir. This increased storage gives the city a reserve that makes lower pumping costs possible and insures an adequate supply even for peak fire- and domestic-use demands.

The clear-water basin is designed and is being built by the Cement Gun Co., Allentown, Pa., using the gunite process. Its shape is that of an inverted truncated prism, with a bottom dimension of 90 feet by 65 feet and a top of 125 feet by 150 feet. Its depth is 23 feet.

The gunite went into place in two layers. The first, a subgrade course, is about a half-inch thick and of 1:5 mix. The second, a structural course, is approximately 3½ inches thick with a 1:3 mix. The structural course used a water cement ratio of 3 to 3½ gallons per bag. The finished application was cured by wet burlap for four days. The walls and floor were reinforced with #6 wire mesh electrically welded with 4-inch openings. The sloping sidewalls were strengthened by a toe wall at the foot of the inclined portion and a similarly constructed cross wall at the top.

The reservoir outlets through a 16-inch cast-iron pipe passing through a 5-foot reinforced concrete tunnel. When it connects to the distribution system, it will supply a pressure varying from 35 pounds to 75 pounds per square inch.

The construction of both improvements has been under the direction of Seth Burnley, City Manager.

Water Supply Wasn't the Problem

Des Moines Water Works survives three record floods

OF THE various problems that last July confronted Dale Maffitt, General Manager of the Des Moines (Iowa) Board of Water Works, an adequate supply of raw water was not one of them. As a matter of fact, as the accompanying photograph shows, he had more water on hand than he could conveniently dispose of.

The experience of the Des Moines Water Works was unique, in a long-range sense, but not at all uncommon for the mid-west. Assistant City Manager G. E. Arnold, of San Diego, often speaks of looking wistfully at this great flood that came down the Mississippi-Missouri valley, and thinking how much the water-hungry southwest would have liked it.

Manager Maffitt reports that the three major floods that Des Moines experienced broke a high-water record that has been standing since 1903. At that time a high-water mark of 118.42 water-works datum had been established. However, on June 5, the river had a water stage of 116.7; on June 13 the stage rose to 119.83; and again on June 26 it went to 119.5. It is interesting to note that Mr. Maffitt did not have any trouble at the plant, and he feels confident that he could have handled much more water than he experienced. The flood naturally caused damage to the water works area but did nothing that could not be repaired without much difficulty.

To show that high-water marks weren't the only records that suffered in 1947, Des Moines experienced an about-face and for the rest of the summer suffered a hot dry spell that depleted the ground-water supply on which the city depends. Moreover, the use of water rose to maximums of 30 mgd, as compared to the highest previous record of 25.4 mgd. This summer saw hourly peaks running as high as 45 mgd.

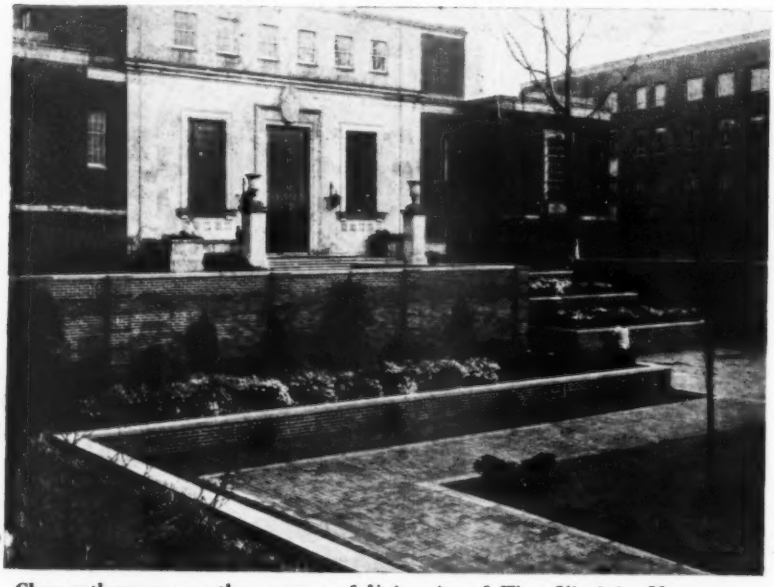
Despite three floods that broke all high-water marks, the Des Moines Water Works came through safely. Sound engineering design had given sufficient margin of safety so that the plant could have withstood an even heavier flood safely. It was designed by Alvord, Burdick, and Howson, Chicago, Ill.

Consequently Manager Maffitt had to pump water from the Raccoon River into his flooding basins in order to recharge the gound-water supply in the plant area. He has not yet taken water from the impounding reservoir that he uses for a reserve supply (see page 88 of THE AMERICAN CITY for November 1946).

"When we look back on the three major floods in June," says Manager Maffitt, "we realize the importance of having utility structures such as ours well built, in order to withstand the tremendous punishment that floods such as these bring."

Free Chrysanthemum Seeds for Use in Municipal Plantings

These two beds in Highland Park, Pittsburgh, Pa., contain some 2,000 plants.



Chrysanthemums on the campus of University of West Virginia, Morgantown.

FREE chrysanthemum seeds, in time for sowing next March or April, will again be made available by Mrs. Albert D. Lasker of New York City for municipal planting. More than 3,000 requests were received, and over four million of a hardy strain of chrysanthemum seed was distributed in 1946, for use as War Memorial plantings in more than 200 communities all over the country.

The chrysanthemums are of a variety known as the "Chicago strain," developed after six years of experimentation by Dr. E. J. Krause, Chairman of the Botany Department, University of Chicago. The flowers bloom from about the second week of October through the first week of November, even in severe frost, and the plantings survive sub-zero temperatures. They have a wide range of color and are especially suited, in Northern sections of the country, for mass fall planting.

Mrs. Lasker donated a supply of the seeds to the New York City Park Department in 1943 as a memorial to her mother, Mrs. Sara Woodard, who had been interested in public park development. More than 12,000 individual plants are now included in the annual New York City fall display of these flowers, which form a blaze of brilliant color in some of the park areas. They are planted in solid beds, some of them 250 feet long, and range in color from white through yellow to pink to red. The New York City Park Department gathers seeds from these chrysanthemums for distribution by Mrs. Lasker.

A folder which accompanies each shipment of seeds includes complete directions for the planting, maintenance, and care of the chrysanthemums. It also suggests a "crusade for beauty" in the communities to which they are sent. Requests for the seeds, for public plantings only, should be addressed to Mrs. Albert D. Lasker, Chrysler Buildings, New York 17, N. Y.

Increasing 2,4-D Effectiveness

THE herbicidal action of the sodium salt of 2,4-D, used by municipalities in the eradication of noxious weeds and plants, can be greatly increased by its application in an acid solution, according to recent experiments conducted in the sections of horticulture and agricultural chemistry of the Michigan Agricultural Experiment Station.* These findings may prove to be of more value than those described in the August issue of THE AMERICAN CITY, in which Michigan Sweet Spanish onion extract was reported to increase the effectiveness of sodium salt solutions of 2,4-D.

The sodium salt of 2,4-D seems to be the preparation most suited to large-scale use because it is relatively inexpensive, water-soluble, and available in quantity. However, it has not been so effective as acid or ester preparations, which require oil emulsions and other carriers that are as expensive as, or more expensive than, the 2,4-D itself.

The results of the latest experiments indicate that the pH range of 2.0 to 3.0 of unbuffered acid solutions gives optimum results if sufficiently strong acids are used. Weak acids, such as acetic acid, do not have the promoting effect of strong acids, as phosphoric acid. If the sodium salt of 2,4-D is applied at these pH levels, the herbicidal action of the preparations is increased to the point where it equals that of the commercial acid and ester preparations.

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* See "The Effect of Different Acidity Levels on the Herbicidal Action of the Sodium Salt of 2, 4-Dichlorophenoxyacetic Acid," by C. L. Hamner, E. H. Lucas, and Harold M. Sell. Reprint from *Michigan Agricultural Experiment Station Quarterly Bulletin*, Vol. 29, No. 4, pp. 337-342 inc., May 1947.

Municipal Information Service Helps Cities Solve Local Problems

LOCAL GOVERNMENTS have too often been slow to appreciate the economy of spending a fraction of a cent on the tax dollar to find out how best to spend that dollar. But more and more municipal officials are recognizing the need for systematic development of advisory research, special reports, surveys, technical advice, demonstration projects, and so on, as instruments for improving administration. A striking demonstration of such recognition is the growth of the Municipal Management Service, inaugurated late in 1945 by the International City Managers Association. How it works is told by the Association's Director, Clarence E. Ridley, in the September issue of *Public Management.*

How MIS Works

Here are some of the salient facts:

The Municipal Management Service was first announced only to council-manager cities, but the demand for the service has been such that it was made available in April 1946 to all cities regardless of their form of government.

The chief administrator, mayor or manager, has a problem. This may arise through a request of the council for advice in deciding municipal policy; or the administrator may receive a recommendation from a department head on a new service, a change in procedure, or some other matter which he must approve or disapprove; or he is in search of a better way of doing a particular job.

Through Management Information Service, an inquiring official is able to receive promptly on such a specific problem the best techniques and procedures developed by municipal officials and specialists, factual information on what cities are doing and current trends on a nationwide basis, and opinions and advice on questions of top management policy, such as how to organize to do the job, how better to coordinate activities, how to direct the work, how to exercise control, how to appraise or measure accomplishment, how to report to the public, and so on.

Special Information Reports

Another feature of MIS is the special information reports which are issued monthly and sent to every city subscribing to the Service. These reports place particular emphasis on procedures and methods of handling particular problems and often include a suggested ordinance or report forms. The subjects covered by these reports are indicated by the inquiries received from officials.

Among the topics covered by the 41 special information reports issued up to September 1947 are:

- Trend toward one-man police cars
- Making pay adjustments for city employes
- Management of city-owned motor equipment
- Factors in reducing the work week for firemen
- Water service charges outside the city
- Municipal regulation of taxicabs
- Unions in police departments
- How to improve the handling of traffic violations
- Municipal Employe Organizations
- Employe service folders and records
- Sanitary landfill method of refuse disposal
- Supplying fire protection service outside the city limits
- How to reduce municipal insurance costs
- Granting sick leave with pay
- Relations with separate boards and commissions
- Personnel rules and regulations

Each city that subscribes to MIS receives a loose-leaf binder every year in which these information reports can be filed, and a cumulative index is supplied annually. These information reports are routed by municipal officials to department heads concerned with the particular problem covered by the report. To many officials these reports are the most valuable contribution of MIS.

Included in Management Information Services are a certain number of subscriptions to *Public Management,* the monthly journal of the International City Managers' Association, and several copies of *The Municipal Year Book,* another Association publication.

What MIS Costs

The fee ranges from $20 (annually) for cities and towns with populations less than 5,000 to $400 for cities between 250,000 and 500,000. For metropolitan areas over 500,000, a fee is set on application and depends upon the service the individual city requires.

The comparatively low cost of Management Information Service is indicated by the fact that a city of 75,000 population, for a $100 annual fee, may request information on specific problems as they arise during the year. Four copies of *The Municipal Year Book* and six subscriptions to *Public Management* are sent to councilmen or department heads as directed by the mayor or city manager. In addition, this city (and all other cities regardless of size) in 1946 received 30 special information reports. Thus for $100 the city receives useful and up-to-date information which the municipality itself cannot possibly compile on an individual basis without spending from $5,000 to $10,000.

Port Authority Idea Progresses in St. Louis

SIGNIFICANT progress has been made in the program for the coordinated development of the St. Louis area, spearheaded by the Metropolitan Plan Association of that city. Legislation recently signed by Governor Dwight H. Green of Illinois creates a five-member commission to work with Missouri officials in planning a comprehensive program for the bi-state metropolitan area. A bill with similar provisions has been unanimously passed by the Missouri House of Representatives, and will be considered by the Missouri Senate when it reconvenes in January.

Under the new Illinois law, the commission is directed to give "specific attention" to the advisability of setting up a permanent bi-state administrative body. It is hoped that such a body can be patterned after the successful Port of New York Authority, which has now functioned for 26 years under a bi-state treaty between New York and New Jersey. The Illinois act carries an appropriation of $25,000 for the study.

The new commission also has the advisory function of making plans for submission to communities for coordination of streets, highways, parkways, parking areas, terminals, water supplies, sewerage disposal, and recreational and conservation facilities in which joint action "will be generally beneficial."

W. Philip Shatts is Executive Vice-president of the Metropolitan Plan Association, 915 Olive Street, St. Louis 1, Mo., the private organization promoting the metropolitan development idea.

Corning's diesel-powered municipal electric plant has a 2,150 horsepower output and a rated kilowatt capacity of 1,447.

Corning Makes Healthy Small-Plant Record

THE recent addition of a 1,000-hp engine to the generating equipment of the municipal diesel-powered electric plant in Corning, Iowa, gives the plant a total hp of 2,150 and a rated kw capacity of 1,447, as compared with 1,450 hp and 943 kws previously. Last year's peak load was 680 kws. The expansion not only provides ample power to serve the increasing demands of consumers, but assures a comforting reserve for years to come.

Corning, with a population of 2,200, began operation of its own generating plant late in 1935. It started with three diesels, of a combined 750 hp, supplied by Fairbanks, Morse & Co. It added a fourth two years later, a 700-hp Fairbanks-Morse.

The first three engines installed were crankcase-scavenging; two were 225-hp engines with three cylinders; one was a 300-hp engine with four cylinders while the 700-hp engine had four cylinders and was pump-scavenging. The new diesel unit, a five-cylinder F-M engine with a 690-kw rating, placed in operation early this year, replaced the 300-hp engine.

Performance of the generating equipment for certain key years is indicated in the following table. The plant operates on a fiscal-year basis, April to March, inclusive. The years chosen are the first full fiscal year of operation, the fiscal year after installation of the 700-hp engine, and the fiscal year 1944-1945.

Year	*Kw-hr Volume*	*Kw-hr per gal. of fuel oil*	*Av.cost per Kw-hr delivered to consumer*
1936-1937	1,199,489	11.8	$.0165
1938-1939	1,653,240	12.2	.0114
1944-1945	2,861,590	12.4	.0116

A table showing a comparison of total revenue and operating expense of the plant and distribution system for the same years contributes to the picture.

Year	*Revenue*	*Operating Expense*	*Ratio of expense to revenue*
1936-1937	$44,426.93	$17,182.68	39%
1938-1939	54,761.55	19,747.15	44%
1944-1945	65,881.01	33,160.86	50%

As of March 31, 1945, the entire cost of the plant, without depreciation, was $302,632.81. This covered the land, the building, the generating and other equipment, and the distribution system. Of a total bond obligation of $280,000 for the original plant and additions, $173,000 had been paid from earnings. In addition to this, payment has been made for the interest and the cost of equipment and the extensions not cared for by the bond proceeds. Without purchase of the big engine, the full debt against the plant would have been retired in 1946. The plant authorities now expect to be in the clear in 1950. Cash surplus last March 31 was $10,234 plus $2,960 in war bonds. A Board of Trustees of three members operates the plant and the water and sewer systems.

Five rate reductions have been made

Electrical Plant Equipment

Diesel engines: Two 225-hp, 3-cylinder, 300-rpm, Model 32E14; one 700-hp, 4-cylinder, 300-rpm, Model 33E16; one 1,000-hp, 5-cylinder, 300-rpm, Model 33F16; all Fairbanks, Morse & Co.

Governors: Woodward Governor Co., Type I. C.

Generators: Two alternators of 137.6 kws rated capacity; one 482-kw; one 690-kw. Two of these have 7½-kw exciters and two have 15-kw exciters, of which three are driven by Morse silent chains and one by Allis-Chalmers V-Belt. All F-M.

Switchboards: Seven panel and swinging bracket with General Electric instruments, and Allis-Chalmers Mfg. Co., rocking-contact voltage regulator. Electrical Engineering & Construction Co.

Water pumps: One 100-gpm, two 200-gpm, and two 350-gpm centrifugals. All F-M.

Cooling towers: Diesel Service Co., Ames, Iowa, with three heat exchangers.

Silencers: Two Model DO4 and two Model MUC, Maxim Silencer Co.

Air filters: Four Type SCF, American Air Filter Co.

Air compressors: One 2-stage, air-cooled, motor-driven, and one 2-stage, air-cooled, driven by gasoline engine, supplied by Ingersoll-Rand Co.

Fuel-oil pumps: One Fairbank, Morse & Co. Perfection rotary motor-driven pump and hand-driven rotary-gear pump.

Fuel-oil filters: Neptune Meter Co.; one Hilliard FA1.

Lubricating-oil filter: Two Hilliard FA3.

Pyrometer: One Alnor exhaust pyrometer, Illinois Testing Laboratories, Inc.

Fuel-oil meters: Neptune Meter Co.

Recording thermometer: One 2-pen Model 6282, Brown Instrument Co.

Distribution transformers: Westinghouse Electric & Mfg. C., Type "SP."

Distribution meters: Duncan Type MF-A.

Oil reclaimer: Diesel Service Co., Renu-oil.

in the life of the plant. Present rates, unchanged since 1940, are as follows:

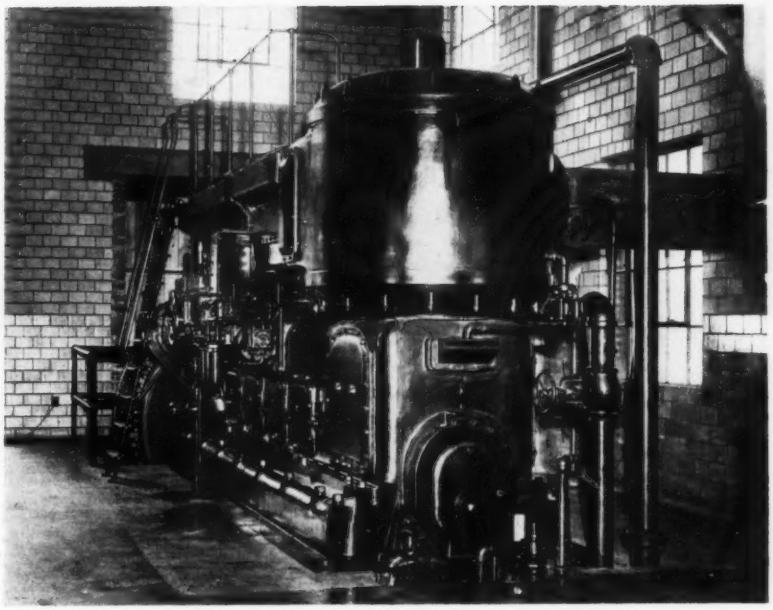
Residence—first 50 kw-hrs per month, 6½ cents per kw-hr; next 50, next 50, 2½ cents; balance, 2 cents.

Commercial—first 100 kw-hrs, 6½ cents; next 100, 3 cents; next 200, 2½ cents; balance, 2 cents.

Power rates begin at 5 cents a kw-hr for the first 200 kw-hrs and run through nine levels down to a flat one cent for all excess over 5,000 kr-hrs. Only the top rates in the first two classifications were changed in the 1940 reduction, each having been 7 cents instead of 6½ cents as now. Power rates have not been changed from those prevailing in 1939.

Among industries using a considerable amount of power in Corning are a feed mill, two hatcheries, and a creamery. A large rural electric cooperative takes about one-fourth of the plant's output of energy. Current is sold wholesale at the city limits, and the plant has no responsibility from that point. Under the present contract, the maximum load the cooperative may demand is 300 kws.

So-called "free services" by the plant have been limited largely to special Christmas lighting, and the excess cost of street lighting over the amount provided yearly by a small tax levy. In the month of February 1941, the plant made no billings for service; an experimental concession not repeated during the war. On the other hand, the plant has furthered various community activities by outright contributions from earnings and by the service of its personnel.



A 1,000-hp diesel engine, part of the electrical generation equipment.

Members of the Board of Trustees are R. L. Wheeler, F. A. Turner, and Fred Bauer. Messrs. Wheeler and Turner were members of the original board. Mr. Bauer succeeded the late Dr. Fred Binder. Bruce B. Watts, who has been superintendent of the plant from its start, is secretary of the board.

A Two-Story Ground Water Supply

CANTON, Ohio, plans to develop an additional daily water supply of 14 million gallons from new water fields located along two forks of a stream lying inside the city. Reports from the Ranney Methods Water Supplies Co., Columbus, Ohio, who conducted the tests in cooperation with the Canton water department, indicated that there are two underground pools of water in the area located at different levels and separated by an impervious strata of clay. The top pool is supplied by infiltration from its tributary creek, and the lower reservoir is computed to hold 2,832 million gallons.

Present plans for developing the field include sinking three large collector wells, each 13 feet in diameter. Two of these wells will penetrate the upper level and extend through the impervious layer of clay. These two wells will collect the water from the upper strata and permit it to flow into the lower reservoir by gravity. The third well will reach into the lower level reservoir and will be the only one which pumps water to the surface. Thus, the city's water supply system will be replenished with water from both levels in the new field.

The quality of the water from these fields is good. Its hardness is roughly half that of the present existing supply.

The cost of the improvement is estimated at $585,000. This money is available from surplus from the Canton water department.

New York Airport Administration

AS the Port of New York Authority assumed responsibility, under the terms of a fifty-year airport lease with the City of New York, for the development and operation of the La Guardia and Idlewild airports, Chairman Howard S. Cullman announced the Authority's immediate operational plans.

Operation and maintenance of the airports will be under the general supervision of the Authority's Director of Operations, Billings Wilson, a member of its staff for the past twenty-five years. He has been in charge of the day-by-day functions of its bridges, tunnels, and terminals since the first Port Authority facility was opened nineteen years ago.

Pending the appointment of a General Superintendent of Airports, D. K. Milligan, the Port Authority's General Superintendent of Terminals, who has been with the bi-state agency for sixteen years, will be acting General Superintendent of Airports. Gordon Hamilton, Airport Manager at Floyd Bennett since July 1946, will be transferred to La Guardia as Acting Superintendent of that airport.

Existing Port Authority departments will be augmented by a Department of Concessions and Revenues, of which Robert S. Curtiss, former vice-president of the Hudson and Manhattan Co., will be Director. An Office of Airport Development, under the direction of James C. Buckley, will be a part of the agency's Port Development Department. Mr. Buckley has been the Chief of the Authority's Port Planning Bureau under which its air transportation studies have been developed. Added to the Engineering Department will be an Airport Engineer, Albert E. Blomquist, previously Airport Engineer for Eastern Airlines. James S. Kenny will transfer from the City to the Port Authority as Assistant Airport Engineer.

Three recent action shots of an Elmira, N. Y., main-cleaning project directed by John G. Copley, water superintendent.

Should Water Mains Be Cleaned and Not Lined?

WHEN it is impractical to shut off a water main and line it after cleaning, is it still economically sound to clean water mains at periodic intervals? J. R. Brown, National Water Main Cleaning Corp., New York, N. Y., has data that show that it is, which he presented in a paper delivered before the meeting of the Indiana Section of the American Water Works Association in Indianapolis, Ind., recently.

Cleaning Work Pays Off in Six Months

In the case of a transmission main, where the water must be pumped, the friction caused by deposits on the pipe interior are a definite, measured, economic liability. As a rule, the cleaning work pays for itself in three to six months by savings in power costs alone. One industrial concern, with approximately five miles of 20- and 12-inch pipe, cleans its mains twice a year, and is able to save between $4,000 and $5,000 per year on its power bill in addition to paying for the cleaning.

The clean mains also give other benefits. They provide a larger return in flow of water for the money invested in the lines. In certain instances they may lower insurance rates by assuring better pressures, and may allow enough boost in pipeline capacity to take care of peak loads without the need for making major capital investments in laying new pipe.

The case of a water service in western New York having a supply line ample at the time of construction for all anticipated loads with a good factor of safety illustrates this. The area served grew so rapidly that it required the full capacity of the line at good flow coefficients to meet requirements. This water works determined that it is more economical to clean the lines twice a year than to lay new pipe at today's prices to serve the load.

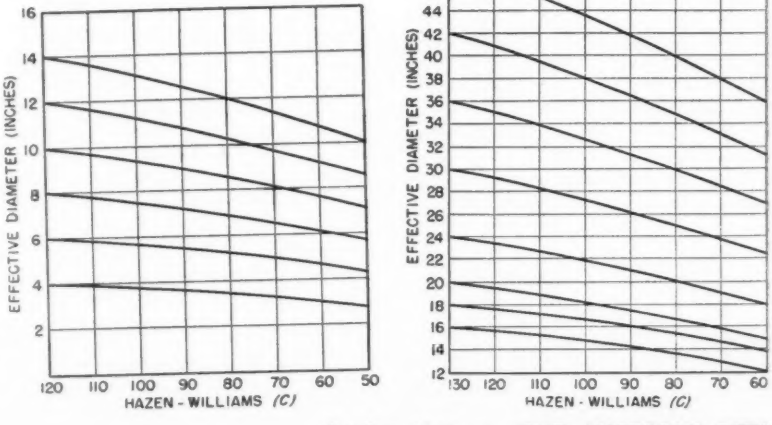
The case of improved insurance rates results in savings, not to the water works, but to the taxpayer. Since the savings are based on property value, the over-all saving to the community is many times the actual cost of cleaning.

Water main "depreciation" is another factor. A 12-inch main with a Hazen and Williams coefficient of 75 has the same capacity as a 10-inch main with a coefficient of 120. The loss to the system may be represented by the difference in installed cost of the 10-inch and the 12-inch main. Today this amounts to something like $2.00 per foot. Since the cost of cleaning mains is generally between 10 and 20 cents per foot, the economies are apparent.

To make the point clearer, he showed that a 10-inch line with a "C" of 70 is the equivalent of an 8-inch line with a "C" of 120. Thus from an operating standpoint one can increase the effective size of his main at low cost.

Mr. Brown emphasized that he did not want to present a case opposing the practice of cleaning and lining a pipe, and stressed the point that a good lining properly placed is the best solution to the problem of tuberculed mains. However, when lining is not practical because of shut-off or cost factors, periodic cleaning of the mains serves as an efficient alternative.

Graphs of capacity loss from pipe roughness. From Journal of A.W.W.A.



The Businessmen's Stake In Community Development

Chambers of Commerce should help sponsor citizens' planning groups for continuous community study*

By EARL O. SHREVE, *President*
Chamber of Commerce of the United States
Washington, D. C.

THE AGGREGATE value of property in cities of 30,000 and over, for which we have recent figures on assessed valuation, reaches the impressive total of over 93 billion dollars. Here is a tangible measure of the stake which business men and the public have in urban development activities. These vast property values are the foundation of the tax revenues of our cities. They help finance the city's services to its citizens. They underlie the extensive mortgage structure of the country.

No lasting improvements in our communities will be brought about which do not rest securely upon the economic base of the community. Business men are especially trained to think in terms of the activities which provide the residents of a community with their livelihood. They are also trained to think in terms of the initial construction and subsequent operating costs of proposed municipal improvements. This type of practical and forward-looking thinking must be applied to our urban problems if we are to make substantial progress in their solution . . .

We are by no means inexperienced . . . in the arts and techniques of community development. Both city officials and private developers, utilities, transit companies, and others have acquired over the years much practical knowledge in this field. There should be no misgiving in the face of this encouraging situation about our ability to plan for the sound future development of our cities.

The Present Challenge

The very rapidity of our urban growth, however, has given some people a feeling of doubt about our capacity to grapple successfully with our current urban problems. The revolution in modern transportation, they think, has all but overwhelmed us. We suffer, they say, from too much progress. If that is so, the cure does not lie in despair of our ability for constructive and timely action. It certainly does not lie in checking progress. Rather we must accept the fact that, as communities, we must vigorously tackle the job of catching up with our own progressive activities as individuals. That is a challenging situation in which to be . . .

The physical structure of our cities is the result of over 150 years of growth. That structure, in my judgment, is basically sound. Its soundness is now being tested, however, by heavier stresses than at any time in its history. Will it be able to adapt itself to them? These stresses arise from the mechanical forces which have given us the motor vehicle and mass transit, and from the application of electric power to factory production.

These are a powerful and dynamic combination of decentralizing forces. To them we have now added, and the recent war has greatly developed, the airplane and atomic energy. No wonder the timid among us look to the future development of our cities with misgiving. But our cities, I am convinced, are rugged and flexible organizations. They can adapt themselves to these extraordinary stresses, provided we do not hesitate, after a careful weighing of all the facts, including costs, to take the actions which are clearly indicated . . .

There is no reason why we cannot eliminate, or g r e a t l y reduce, our blighted areas and slums within the next decade. Certainly here is a goal worthy of our greatest efforts. As a matter of fact, the future soundness of the physical structure of the city will depend upon our ability within reasonable limits to create within the city an environment which meets the requirements of modern living standards. It can be done. Already the way is being pointed by progressive community action.

Over-all Relationships

Satisfactory solutions for these major urban problems of traffic congestion and off-street parking, and of the rebuilding of blighted areas, will not be found unless we have some acceptable way to take a continuous over-all look at the community. What, for example, are the relationships between a proposed system of express streets, or of controlled access thoroughfares, and the downtown shopping district? What are the relationships between such traffic arteries and proposed off-street parking facilities? What are the relationships between such expressways and the proposed rebuilding of a downtown blighted neighborhood? What are reasonable standards of land use in such a rebuilding program? What are the relationships between proposed express streets, or controlled access expressways, and mass transit?

These and other relationships, and reasonable standards of land use, must be thoroughly studied and clearly grasped. To understand them, we must know the reasons for the city's growth and the direction this growth is taking. We must also understand the significant changes which are taking place in the movement of people and of commercial and industrial activities.

The means which we adopted in the early twenties to enable us to take this continuous over-all view of urban problems is the city planning commission. These commissions are in the nature of staff agencies advisory to the municipal government. Chambers of commerce were frequently responsible for setting them up. They exist in many communities throughout the country. Where properly staffed they are doing good work, some of which is outstanding.

Civic Group Backing for Planning

But experience has demonstrated that even an efficient city planning commission is not enough. It is not easy to gather and to interpret the significant facts bearing upon the solution of complex urban problems. The city is an intricate organization with its own laws of growth and of change

* Excerpts from a talk delivered September 11, 1947 before the Businessmen's Conference on Urban Problems, Washington, D. C., sponsored by the Chamber of Commerce of the United States.

which require much hard study to understand. The work of the city planning commission needs to be coordinated with the work of the operating divisions of the city government. It also needs to be supplemented by the active interest in these planning problems on the part of civic organizations. By active interest I mean assistance both in assembling the necessary data and keeping them current, and in the continuous study on the part of citizens as well as by the city planning commissions of the pertinent facts in order to bring out their significant bearing on proposed improvements.

I see no easy way to arrive at sound decisions with respect to these urban problems. The facts must be continuously and intensively examined and appraised by informed judgment. The experience of other communities must be brought to bear upon the problems in our own community. We need public discussion and even public debate, based not upon mere opinion or prejudice, however, but upon the established facts. The success of any program for community development, no matter how well it is otherwise organized, will depend finally upon public understanding and public support. This fact must not be overlooked. It should be basic in our approach to these problems.

Continuous Study Needed

For that reason the chamber of commerce in every community, if it has not already done it, should sponsor a non-official community planning group, composed of outstanding business and civic leaders. This citizens' group, working in cooperation with and advisory to the municipal government and to the city planning commission, where there is one, should devote its attention continuously to the study from an overall point of view of the forces at work in the community's growth and development . . .

Only through the active interest of the business men and other citizens shall we develop in our communities the initiative and the power of decision, based upon facts and upon their competent interpretation, which are required to solve these pressing urban problems.

This is a major job of leadership for every chamber of commerce.

Reviewing "Patrick Geddes In India"

To the Editor of THE AMERICAN CITY:

One of the unfortunate characteristics of the planning profession, as I suppose of any profession, is that between the requirements of a busy practice and of keeping up with current literature and developments, the practitioner fails to refresh himself from the original springs of his inspiration. The little new book, *Patrick Geddes in India**, is one of those authentic sources. It is stamped with the imprint of a great mind which felt it necessary not only to talk about the people as we all do, but to go among them, to find out what was needed, to fill the frame with genuinely local colors.

Here was not a man who sat behind a wall of statistics and reports, but a man who spent most of his time exploring in the field the human meaning of the statistics and how the doctrine could be adapted and enriched by contact with the spirit and needs of the place and the people (Geddes's concept of Folk, Work, Place). One of the most satisfying elements in this book is his little sketches-in-place of actual neighborhoods, contrasting his economical solutions (tailored to the situation and enhancing the characteristic quality of the area) with the ruthless, ineffectual and tremendously costly street-widenings as proposed by the authorities. This he called conservative (i.e., conservational) surgery.

He was a creator and exponent of the grand planning, but in application he used horse-sense methods. He broke his large planning down to human scale. The habitat is India, and I can speak for his authentic understanding of requirements there, but the method of loving study is universal. What a wonderful s y m p a t h y and grasp he achieved of eastern urban conditions: the social importance of the little meeting square in each neighborhood—for all Indians are recent villagers and still villagers at heart; the validity of the narrow lane in a land of hot sun; the importance of the tank or pool as a cooling element in cities.

The diagnostic survey on which he insisted emphasized this human character. It was not a cold, desiccated survey, but one that emotionally interested both the surveyor and those surveyed.

Surely one of the delightful gems in the history of planning is the chapter, "Maharajah for a Day." Utilizing the possibilities of the great religious festival *Diwali*, Geddes added to the usual elements in the procession the huge figure of Indore City as a goddess carrying the city's banner, with the city's new plan on one face. Following her were floats bearing models of new public buildings, the proposed housing developments, the gardens, and the tree-lined squares. The 12-foot-tall demon of disease, a suitably ugly and disgusting fellow, was also a member of the party. The parade deviated from the usual main routes to cover almost every quarter of the city.

At my request, the parade and exhibits division of the Corporation Counsel's office of Bombay made a special study and has, after three months, returned an opinion that there is nothing patentable in this idea, that we are all at liberty to adapt it in our own city. We might, for example, add the great lumbering figure of Indifference, chucklingly absorbed in his comic strip, surrounded by playing children dodging or failing to dodge oncoming traffic, or the b e l c h i n g of soft-coal smoke, or the haranguing real-estate lobbyists.

It should be added that the photographs by Anthony Denney during recent war service in India, and their captions selected from Geddes' text, are in themselves sensitive and illustrate perfectly both the squalor and the unique beauty of India.

ALBERT MAYER

Albert Mayer, recently returned from one of his Indian trips, is a member of the firm of Mayer and Whittlesey, consultants in town and rural planning to various Indian official planning commissions. The firm is well known in this country for its practice in planning communities, as well as for schools, health, church, and residential work.

Mr. Mayer, who combines the professions of architect and engineer, was stationed in India with the U. S. Army Air Corps Engineers during the war. His enthusiasm for the development of the new India and his understanding of its problems led to the consultantships now carried on by recurring visits.

**Patrick Geddes in India*, edited by Jaqueline Tyrwhitt in cooperation with H. V. Lanchester and Arthur Geddes, with an introduction by Lewis Mumford. Lund Humphries, London. 1947. 104 pp. and 25 full-page illustrations. Available in U. S. from Wittenborn's, 38 E. 57th St., New York, N. Y. $3.00.

Shreveport Stakes Out an Expressway

. . . that will eventually wipe out traffic congestion and delays that hamper its economic development

HOW to tie together its central business district, its industrial, commercial and recreational areas, and its residential districts is a problem facing Shreveport, La. A report by H. W. Lochner and Co., Chicago consulting engineers, indicates that an urban highway system utilizing an expressway carrying the main portion of the traffic; a set of radial routes to other portions of the city feeding into the central business district, and an added set of secondary through streets will solve the problem.

Converging on the central business district are five major flows of local and external traffic. Two of these, extending NE-SW across the city, coincide with interstate routes and ultimately will carry approximately 10,000 vehicles daily. Along these lines the main expressway artery is planned. Access from cross streets would be limited to controlled locations at about one-mile intervals, and they would be provided with ramps at such interchanges to allow smooth and uninterrupted connections.

In a NW-SE direction lie the three remaining traffic lines of lesser magnitude. This program calls for their interception by "radial" routes of a high design standard, but not to the degree used on the expressway. The number of cross streets for these will be kept to a minimum but will be more frequent than the mile intervals on the expressway.

Feeding the expressways and the radial routes will be a "secondary street system" that will provide for the minor crosstown and interneighborhood movements. This system will have in its design consideration for the public carrier system that plays such an important part in Shreveport's transportation plan. In the main, this construction will require only the widening of existing streets and the enforcement over a period of time of the building ordinance which requires that all buildings be placed 40 feet from the center line of the existing street. Some railroad grade separations also will be required.

The expressway is designed for two lanes of through traffic in each direcrection for its entire length. For much of its length the dividing strip has been designed wide enough to permit a third future lane in each direction. Each lane will be 12 feet wide with mountable curb and gutter, and the outer lane is flanked by a 10-foot-wide stabilized shoulder for emergency parking.

The sharpest horizontal curve is one of 5 degrees, permitting a safe speed of 50 miles per hour. The maximum pavement grade is 3½% for the four main traffic lanes, 6% for upward ramps, and 8% for down ramps. The final design for construction should incorporate approach transition curves for all horizontal curves sharper than 2 degrees.

All structures were designed with a minimum vertical clearance of 14 feet and agree in other requirements with the standards of the Federal Public Roads Administration. The proposed high-level structure over the Red River is a fixed cantilever truss bridge with a through deck.

Economic Benefits

What are the economic benefits of such a highway system within a city? This report shows that the real and measurable benefits are sufficient to make the system a fine investment. This was determined by making a comparison between the cost of operating vehicles on existing streets and the cost of operation on the expressway together with the existing streets. The cost consists of two components—value of time and value of mileage. The time cost is the value in dollars of the time consumed by the vehicle and its operator passing through areas being investigated, and the mileage cost is the value of gas, oil, tires, and similar items expended.

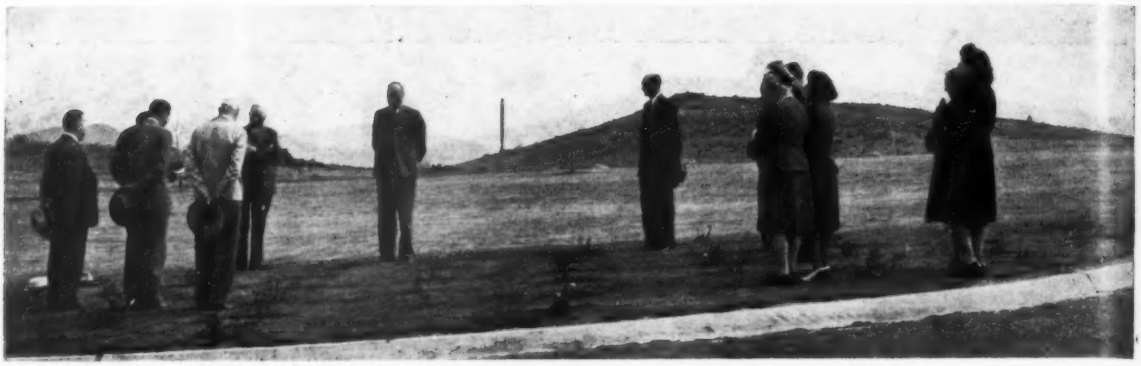
This study shows that in 1949 the benefits begin to overbalance the costs, and by 1967 the benefits rise to more than twice the annual capital cost.

In considering the additional distance a driver would travel to take advantage of the expressway, traffic is divided into two parts, local and through. A separate study revealed this distance to be 0.1 mile, over which an average speed of 15 miles per hour was used.

In computing the time element for traffic remaining on major streets after the expressway is in operation, a reduction of 10% was made to account for the increased efficiency of the major streets by virtue of traffic being diverted from them to the expressway.

Existing traffic volumes on major streets are in some cases less than on that anticipated on the expressway, because the expressway would attract more traffic than the major streets. This additional traffic which is now using any of the several major streets was theoretically considered as travelling on those streets included in the study.

A panoramic view of Shreveport's new highway plan.



Dedication ceremonies at the new municipal cemetery in Klamath Falls, Ore.

Klamath Falls Builds New Municipal Cemetery

KLAMATH FALLS, Ore., one of more than 700 cities to own and to operate a municipal cemetery, has succeeded in solving many of the problems connected with the planning and development of such a venture. The city's new cemetery, dedicated in May of this year, will be landscaped and be provided with a modern crematorium and mausoleum.

Selection of a suitable site proved to be one of the major obstacles encountered by those interested in the construction of a cemetery to replace one already existing in the community. The other cemetery had not always been properly maintained and managed since its establishment in 1848, and it was decided that it would be better to start again on a new location.

A citizens' committee, headed by Ed. Ostendorf, who was later elected Mayor of Klamath Falls, made the investigation and recommendations to city officials which resulted in the present site location. The committee's major problems were in securing land which was convenient to transportation and where water would be available for the proper care of the lawns and shrubs. An attractive site adjacent to the Klamath River and surrounded by a background view of mountains was decided upon. This location was also near the intersection of both a county road and a state highway.

Expenditure Authorized

In the fall of 1945, voters of the city authorized an expenditure of $60,000 to buy the 90-acre site and to build a modern cemetery. For the subsequent construction of a crematorium and mausoleum, $40,000 was authorized. The land was then purchased, and the water problems were solved by having a pumping plant installed near the river from which an 8-inch pipe was carried to the high point of the cemetery location, some 1,600 feet away.

Although the site covers 90 acres, the city is improving only a small portion at the start. Streets and curbs have been installed and the lawn has been completed in six acres of a 25-acre section on one side of the county road. It is estimated that this acreage will be sufficient for 4,800 adult burials.

Graves 42 inches wide and 9 feet long are sold for from $50 to $125, including perpetual care. No tombstones are permitted in the cemetery, and standardized bronze markers will be set in the ground for each grave.

A trust fund consisting of 25% of all the grave sales, which already total $10,000, has been set aside to assure the continued upkeep of the cemetery. Bids for the crematorium and mausoleum, authorized by the voters, are to be secured early next year.

Photograph of a contour model of the new municipal cemetery.

Dangerous Police Assignments Handled with Minimum Risk

The use of tear gas by our police departments helps apprehend criminals without unnecessary bloodshed

TEAR GAS means fewer dead police heroes and less hazardous police work. Let's have less hush-hush and more training in the proper use of non-hazardous weapons.

Just as firemen, wherever possible, use fog to minimize water damage, so the police are placing increasing reliance on gas to quell riots, to make dangerous arrests, and to apprehend barricaded criminals and lunatics. The advantages are not only the conservation of citizens, but the conservation of police officers as well.

Public Uninformed

Except in the comparatively rare event of civil disorders, neither the public nor its elected officials sees this phase of police work. In fact, it is not only neglected but soft-pedaled as well. Few police books, though they carry 600 pages on theory, classification of officers, and countermeasures, contain even the merest mention of apprehension without bloodshed or the efficiency of non-toxic gas. Some of them do point out that "no one, officer or private person, with or without a warrant, is privileged to use deadly force merely to stop the flight of one whose arrest is sought for a non-dangerous felony." When the police are summoned to the scene of a crime, they are likely to know the degree of dangerousness involved. They can hardly hold a hearing at the scene. They must either try to catch the offender or virtually watch him escape. The books speak of the almost universal right to use "non-deadly force" but do not call it gas. What is it—wrestling?

Riots are not the isolated phenomena they once were. Mass picketing per se is incipient mob violence. In law a riot requires no more than three persons. Says Perkins' *Elements of Police Science* (1942), "If a riot is of such a nature that it cannot be subdued by mild measures, the menace to the public is so great that *any force* necessary to terminate it may be used. This, however, is to end a present menace. If the menace has ceased, and the only present purpose is to stop the flight of one or more of the offenders, deadly force may not be used if the riot did not amount to a felony."

This appears to mean that a mob may be dispersed by machine-gun fire, but that the fleeing ring leaders may be apprehended only by non-lethal means. In most cases both the dispersal and the apprehension may be attained by the informed use of modern gas weapons. Yet they are rarely recommended or approved in print. Toward the use of gas there seems to be a shame as false as that toward venereal disease a few years ago. Many city officials and police chiefs regard their possession of gas as unfavorable publicity. They purchase the material sub rosa, use it as quickly as possible when necessary, and try to have the public know little about its use and to forget that little expeditiously. The resentment of organized labor is a sufficient explanation. The open purchase of a large amount of gas munitions by a city might be looked upon as an unfriendly act. A large purchase of firearms, on the other hand, would probably pass unnoticed. This has the aspects of reverse thinking, detrimental to labor, the public, and to the police.

Other Police Equipment

The public sees and comprehends the modern means by which the police reach a hazardous scene. High-powered cars and motorcycles are accepted necessities. The latest type of radio with which the cars are equipped no longer has to be purchased with money collected from police dances. The nightly crime and police stories on the radio have especially dramatized the click of the teletype, using it as a symbol of police atmosphere and action. The police telegraph call boxes are almost as familiar as the fire alarm box. All these are accepted as essential police equipment by officials and the general public.

The result is that officers are quickly informed and go promptly to the danger spot. The sooner they are there the better for the public, but the more hazardous for the police, because frequently the criminals are still present. Usually the officers cannot "go in with guns blazing." They must first find at whom to blaze. Criminals in the presence of uniformed officers have no such problem, and their weapons frequently are superior to those of the police. Often in such situations, the difference between life and death is the possession of non-toxic gas material and devices that are dependable and do not cause permanent injury. Gas is particularly effective in driving a barricaded person into the open. It is the alternative to gunfire. For that reason it should also be the preferred means of handling mobs.

Tear gas (CN) is usually adequate for the situation. In some cases, sickening gas (DM) is required. Both gases come in shells and in grenades. The shells are non-explosive and are used in a gas gun. A short-range shell sends a blast direct from the gun muzzle to a distance of 40 feet in one second and has a cloud spread of 25 feet. For riot control there is a projectile that delivers a heavy visible gas up to 225 feet from the operator. The projectile indicated for dislodging barricaded persons has tail fins for accurate flight. Time-fused to start gas discharge in 3.4 seconds, it penetrates doors, windows, and partitions. There is also a flare shell with a parachute which rises 150 feet and furnishes 30,000 candlepower for a minute. Also available are gas billies that fit in the pocket. They are effective for guards as well as for policemen. They include the instantaneous blast-type and the 3-second spray-type for covering more territory. Finally, there is the gas grenade that discharges through openings in top, sides, and bottom. One type breaks into three sections, each traveling in a different direction and acting as a separate discharging grenade.

All these gas projectiles and grenades are non-hazardous, non-explosive, non-leaking. Their effective and economical use requires training, which is being given increasingly, and the municipality's officials should encourage widespread knowledge in the use of gas.

Letters from Police Chiefs

NOT long ago, we were told of a psycopath who had threatened the life of his son and daughter-in-law. It was known that this man carried a shotgun. A psychopathic warrant was obtained, and our department assisted the sheriff's office in serving it.

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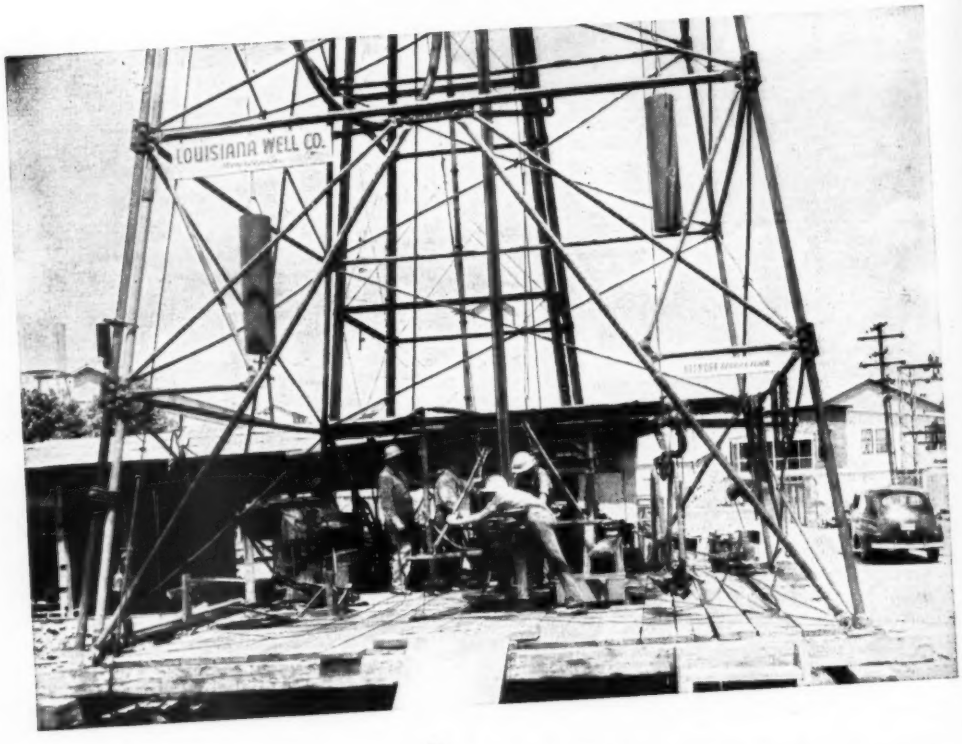
For wells, lakes, rivers, reservoirs, irrigation—or for any use where large quantities of water must be produced at low cost. Sizes range from 40 to 16,000 gallons per minute. Write for Layne Pump Catalog.



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West Monroe city Officials know the cost of operating these systems, how they keep steadily on the job with little or no upkeep cost . . . and how they fulfill every claim made by Layne.

Layne Well Water Systems are engineered and built to serve cities, factories, chemical plants, railroads, packing plants and air conditioning and irrigation projects. They have the extra ruggedness of quality and precision type of construction that give complete satisfaction.

If you are in need of more water, Layne Engineers will gladly make valuable and dependable recommendations. For literature address

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When the suspect saw the officers approaching to serve him with the warrant, he rushed into his house and fired upon our men, seriously wounding one of them.

We then filled the house with gas, firing our 37-mm gun with Federal Spedeheat projectiles from about 30 yards. One projectile was fired into the living room and another into the kitchen. There is sufficient force behind the projectile to penetrate ¾-inch siding and inside lath and plaster, and there is sufficient gas in the two projectiles to make an eight-room, two-story house completely uninhabitable.

The psychopath went to an upstairs bedroom, barricaded all the doors, and placed the bedclothes around the openings of doors and windows. It required about four to five minutes for the gas to penetrate the room and drive him out of the house. As he came out, he attempted to shoot a deputy sheriff stationed at the bottom of the stairs. However, with his eyes affected by the gas, he was unable to see and, even at a distance of 20 feet, he missed him.

I am confident that had it not been for the use of tear gas in this instance there undoubtedly would have been two or three police officers killed or seriously injured.

VERNON RASMUSSEN, *Chief*
Police Department
Glendale, Calif.

IN a recent incident, I feel certain that the lives of some of our policemen were saved by the use of barricade shells and tear gas. Two deputy sheriffs had gone to a house to arrest a Negro charged with shooting a man. The Negro shot at the officers, killing one of them. The other deputy called for our assistance, and several policemen were sent to aid him. The Negro shot at these men, and it was only by the use of gas shells that our men were finally able to gain entrance to the house. By that time, the Negro, who had been wounded, died. The officer killed was Deputy Sheriff Harley Nelson.

JOE KIMSEY, *Chief*
Police Department
Knoxville, Tenn.

ON May 23, this year, we received a call that a man had barricaded himself in his home with a shotgun and box of ammunition. When we arrived at the scene, we were informed that he had been released recently from a veterans' mental hospital and had driven his family from the farmhouse at the point of a shotgun, threatening to kill them if they returned. Barricaded upstairs, he threatened to shoot anyone who came near him. It was impossible to get close to the house, because there was no cover for our officers.

With our Federal 37-mm gas gun, we fired several shells through all of the upstairs window. One of the officers directed the man to throw the shotgun out of a window and come down. A few minutes later, when the cornered man could no longer stand the gas, he threw his shotgun out, as ordered, and surrendered.

It is my opinion, as well as that of the other officers at the scene that, had it not been for the use of the gas gun, we would not have dislodged this man without a serious accident to one of our officers, or to the man himself. I feel that every law enforcement agency should be fully equipped with tear gas and guns.

LOWELL T. GEORGE, Chief
Police Department
Hornell, N. Y.

Zoning, Planning and Urban Redevelopment In New Jersey's Proposed New Constitution

AT THE November election this year, the voters of New Jersey will have an opportunity to ratify a much-needed new constitution for the state. Through the summer a duly elected Constitutional Convention has been in session, the results of whose efforts were finally approved on September 10 by an almost unanimous vote of the delegates for submission to the voters.

In addition to the broad powers assigned to the Legislature, there are three specific paragraphs relating to zoning, planning, and urban redevelopment:

Article IV, Section VI, Par. 2. The Legislature may enact general laws under which municipalities, other than counties, may adopt zoning ordinances limiting and restricting to specified districts and regulating therein, buildings and structures, according to their construction, and the nature and extent of their use, and the nature and extent of the uses of land, and the exercise of such authority shall be deemed to be within the police power of the State. Such laws shall be subject to repeal or alteration by the Legislature.

3. Any agency or political subdivision of the State or any agency of a political subdivision thereof, which may be empowered to take or otherwise acquire private property for any public highway, parkway, airport, place, improvement, or use, may be authorized by law to take or otherwise acquire a fee simple absolute or any lesser interest, and may be authorized by law to take or otherwise acquire a fee simple absolute in, easements upon, or the benefit of restrictions upon, abutting property to preserve and protect the public highway, parkway, airport, place, improvement, or use; but such taking shall be with just compensation.

Article VIII, Section III, Par. 1. The clearance, replanning, development or redevelopment of blighted areas shall be a public purpose and public use, for which private property may be taken or acquired. Municipal, public, or private corporations may be authorized by law to undertake such clearance, replanning, development or redevelopment; and improvements made for these purposes and uses, or for any of them, may be exempted from taxation, in whole or in part, for a limited period of time during which the profits of and dividends payable by any private corporation enjoying such tax exemption shall be limited by law. The conditions of use, ownership, management, and control of such improvements shall be regulated by law.

Local Government Debt Down 4.2% in 1946

ACCORDING to the final report in the series, *Governmental Debt in the United States: 1946,* issued by the Bureau of the Census, local-government debt was decreased 4.2% in 1946, a larger reduction than was made in 1945. A decrease of 18.9% in the debt of local governments was made during the six-year period from 1940 to 1946.

Local government debt outstanding in 1946 amounted to $13.6 billion dollars, of which city debt represented $8.1 billion dollars. This compares with a state government debt of $2.4 billion dollars and a federal debt of $269.4 billions.

City debt accounted for slightly more than half of the total state and local debt in 1946. The percent relationship of city debt to aggregate state and local debt has been fairly stable since 1940. Special-district debt ranked next in amount, being followed in order of magnitude by county, school-district, and township debt, with the last named by far the smallest.

All types of local governments shared in the 1946 reduction of local debt. The absolute amount of debt reduction for cities and special districts was larger than in the previous year, while counties, townships, and school districts reduced their debt by a smaller amount than they did in 1945.

City debt was reduced 3.7% from 1945 to 1946, and township debt 6.8%. By 1946, indebtedness of each type of local government was below that of 1940, with the exception of special districts. Local housing authority bond issues contributed to an increase in the latter category of 1.4 percent. City debt was reduced 18.2% since 1940; township debt 42.8%, and school district debt 29.2 percent.

FASTEST CUTTING, MOST RUGGEDLY BUILT CHAIN SAWS ever made

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All kinds of timber cutting

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DISSTON CHAIN SAW with Mercury Gasoline Engine

11 h.p., 2-cylinder engine. Sizes: 24" to 84"

For fast, dependable performance—in timber cutting of every kind—the Disston Chain Saw is outstanding. It's a portable, easy-to-operate, two-man, self-contained unit for use in forests and parks; on tree service, railroad and contracting work; at shipyards and manufacturing plants—wherever there are trees to fell and buck or timbers to cut.

The Disston Chain Saw is built for long, hard service and low cost operation. It delivers more horsepower per pound of weight, and is manually controlled to utilize full engine power under all cutting conditions.

Among its many outstanding features are the two cylinder, 11 h.p. engine; positive-acting, non-slip, multiple-disc clutch; the detachable air cleaner; and the tough, durable cutting chain of Disston Steel. It's a product of Disston saw making skill and dependability . . . a typical example of the economy of Disston quality.

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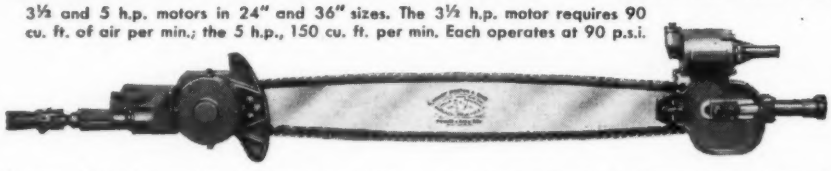
3½ and 5 h.p. motors in 24" and 36" sizes. The 3½ h.p. motor requires 90 cu. ft. of air per min.; the 5 h.p., 150 cu. ft. per min. Each operates at 90 p.s.i.



A powerful, light weight, air-driven saw that can be operated wherever compressed air is available—even under water or where explosive vapors are present. Many are in use by railroads, contractors, shipyards, utilities and industries of various kinds. It is ruggedly built, well balanced and easy to operate from any cutting position and on woods of every kind. Equipped with heavy-duty, vane-type motor, specially engineered and produced by Chicago Pneumatic Tool Company for use on Disston Chain Saws. Requires little maintenance as it is built for long, economical service.

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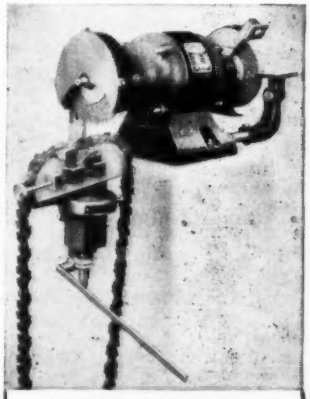

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Winnipeg, Canada, Builds

A New Incinerator

Part II—showing what went into the engineering study that resulted in a decision on incinerator types

By W. D. HURST
City Engineer
Winnipeg, Canada

LAST MONTH'S installment gave the background of our new incinerator installation, showing what engineering reasons caused us to select an incinerator over other types of refuse disposal methods, why we decided on one unit instead of two or three scattered about the city, and why we decided to put it where we did. This month's installment will describe the design details of the incinerator, will outline the bidding arrangement, and will tell what equipment and apparatus the plant has.

The consulting engineers recommended that the incinerator be designed to handle 500 pounds per capita per year of combustible mixed garbage and refuse from a population of 320,000 (present population of Winnipeg and adjacent municipalities, 289,000), with a maximum monthly rate of 150% of the average. During such maximum periods, it was recommended that the rate of incineration be increased by using coal, wood, or other additional fuel; or by extending the hours of operation in excess of a 5½-day week. On the basis of the foregoing, it was recommended that the plant to be provided have:

A. Three furnace units, each to have a rated capacity of 100 tons of garbage and combustible rubbish per 24 hours.

B. A building and chimney of sufficient size to house and serve four furnace units, each having a rated capacity of 100 tons per 24 hours.

Bids for Alternate Furnace Types

These recommendations were approved, and in order to provide for adequate competition in the bidding, plans, and specifications were prepared for two alternative types of furnaces:

A. Manually stoked square furnaces, including units of conventional design with the burning grates along the front of the furnaces, and a combustion chamber, integral with the furnace structure, located at the rear of the unit.

B. Mechanically stoked round furnaces with a mechanical stoking device for moving the refuse gradually from the center of the furnace to its periphery and with a separate structure for the combustion chamber with a flue connecting thereto.

The specifications permitted bids only from companies offering equipment, appurtenances, or methods which had been in regular, successful operation in a municipal destructor plant having one or more furnace units of comparable capacity and burning mixed refuse of comparable characteristics for a period of at least a year. Mixed refuse was defined as a mixture of garbage and combustible and non-combustible rubbish, including tins and grass cuttings, having a moisture content of not over 55% by weight, and a heating value of not less than 7,000 B.T.U. per pound of dry solids.

The specifications laid down detailed requirements for furnace type and design and for walls, roofs, floors, doors, charging hoppers and containers, charging gates, grates, air admission valves and ducts, ash hoppers and gates, preheaters, forced draft fans and ducts, flues and expansion chambers, refractories and brickwork, air compressors, instruments and accessories, and tests to meet guarantees.

How Bids Were Balanced

A procedure for economic comparison of bids was also included, which required a guaranteed statement of:

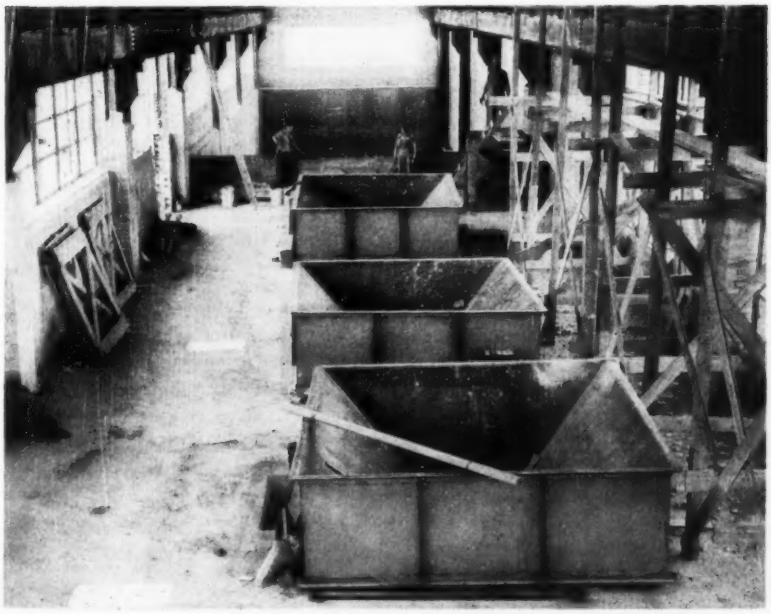
(a) Number of men on each shift required on stoking floor for direct operation of the incinerator equipment.

(b) Average number of kilowatt-hours of electric power per ton of refuse incinerated.

(c) Average number of pounds of (10,000 B.T.U. per lb.) coal, per ton of refuse incinerated.

In addition, the bidder was required to guarantee:

(a) That each furnace unit would incinerate 100 tons of the specified mixed garbage and refuse per 24 hours, and that at guaranteed capacity, and during normal operations, the temperature in the combustion chamber will not fall below 1100° F. for more than five minutes in any one hour, and that an average tempera-



The now conventional pit-and-crane type of refuse handling will be used.

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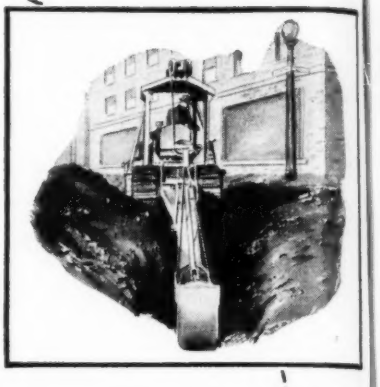

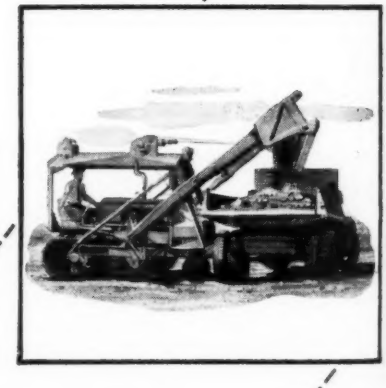

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Converting the unit from Backhoe to Overhead is simplicity itself. Boom and bucket can be attached in an hour and detached in 10 minutes. Shovel arms and bucket can be attached and detached equally fast.

When you're not ditch-digging, this unit can be used to load sand, gravel, stone, debris or snow.

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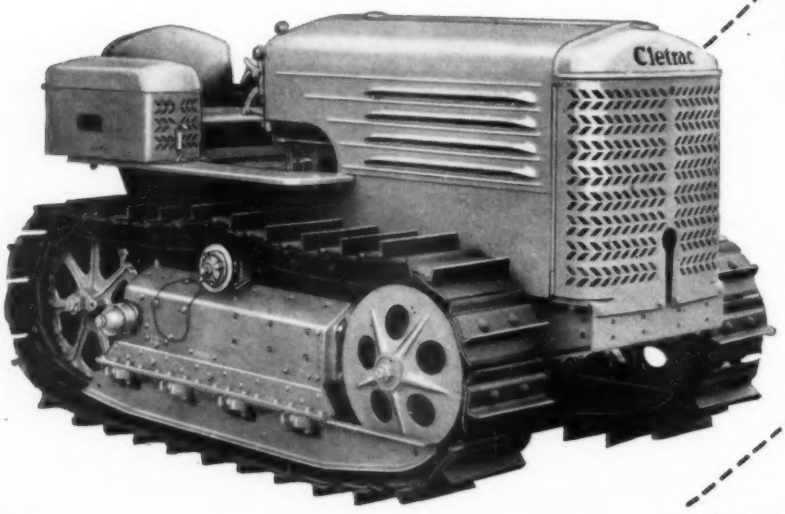

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ture of at least 1400° F. will be maintained.

(b) That at guaranteed capacity and under normal operation, the equipment will not cause a nuisance through escape of obnoxious odors, gases or dust from the chimney, and that no smoke will escape having a degree of darkness or density greater than Chart No. 1 of Ringleman's smoke scale.

The bids were to be evaluated as follows:

(a) The lowest price for the building was to be multiplied by 0.06.
(b) The price tendered for the equipment was to be multiplied by 0.20.
(c) The number of men per shift guaranteed was to be multiplied by $5,400.
(d) The number of kilowatt-hours of electric power per ton of refuse was to be multiplied by $500.
(e) The number of pounds of coal per ton of refuse guaranteed was to be multiplied by $20.
(f) The amounts obtained in (a), (b), (c), (d), and (e) above were to be added together and the sum total to be the evaluated cost.

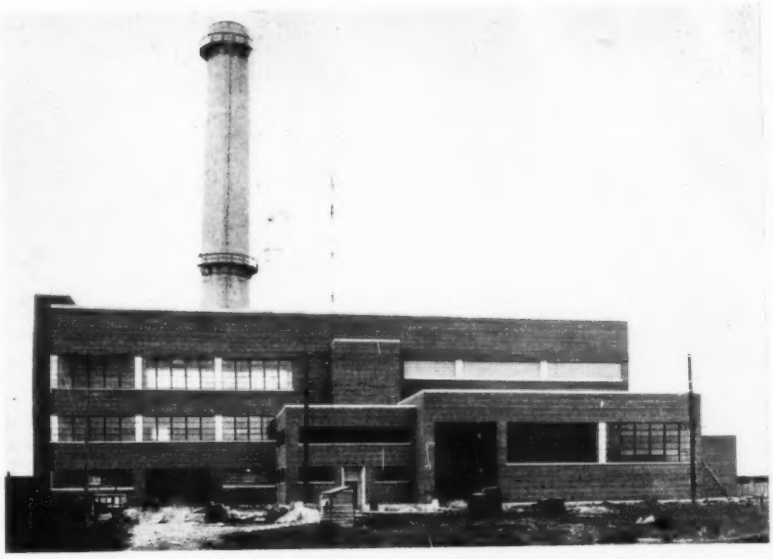
In the event of unbalancing of bids, the city reserved the right to include in the evaluated cost a sum equal to 10% of the applicable tender prices for the building and equipment in lieu of the 6% and 20% specified in (a) and (b) above.

Bids Evaluated

Bids were called in June 1945, and when they were received, the lowest combined bid for building, equipment, and chimney amounted to $648,300, approximately $100,000 more than the authorized bond issue. The bids were rejected, and new bids were called in February 1946. When these were received, the lowest acceptable bid amounted to $651,750, based on evaluated prices. As this still represented approximately $100,000 above the amount authorized to be spent by the ratepayers, the City Council sought and obtained the approval of the Provincial Legislature to expend the additional amount, and in March 1946, the contract for the work was awarded as follows:

Buildings and appurtenances to Winnipeg Supply and Fuel Co., Ltd., for	$386,999.00
Furnaces and appurtenances to Francis Hankin & Co., Ltd., for	219,990.00
Chimney to Canadian Custodis Chimney Co., Ltd.	44,760.00
	$651,749.00

The three furnaces being supplied are Nichols "Monohearth" as manufactured by the Nichols Engineering and Research Corp. of New York City. Each



The finishing touches are being added to Winnipeg's new incinerator.

furnace has a capacity of 100 tons per 24 hours, is circular in plan, and has a mechanical stoking device for moving the refuse gradually from the center of the furnace to its periphery. The burning grates form an annular ring around the outside of the unit. A separate circular structure is provided for the combustion chamber, with a flue connection to the furnace. We believe that the mechanical-stoking feature will permit higher burning rates per unit of area and permit a saving in operating labor.

The furnaces and their accessory equipment are being housed in a three-story building, at one end of which is the storage bin into which the collection trucks and trailers will dump, and from which the refuse will be carried to the top of the furnaces by gravel-bucket cranes.

Tipping Floor: The tipping floor will be approximately 73 feet long, parallel with the storage bin, and 45 feet wide.

Storage Bin: The storage bin will be approximately 73 feet long, 24 feet wide, and 18 feet deep. It will have a capacity of 1,180 cubic yards (350 tons, based on garbage weighing 600 pounds per cubic yard).

Crane: One crane is provided capable of handling the entire load and will be an electrically operated, four-motor bridge crane, capacity 4 tons, with grab-bucket capacity of 2 cubic yards.

Charging: The plant is equipped with charging containers over each furnace, each having a capacity of 1 yard and pneumatically operated.

Furnace: Each of the three furnace units has a rated capacity of 100 tons per 24 hours and an inside volume of 9 cubic feet per ton of rated capacity. Each combustion chamber has a minimum volume of 16 cubic feet per ton for 24 hours of rated capacity. The furnace walls are constructed with an inside lining of firebrick, the outside of which will be insulated brick, the entire unit being encased in the sheet-steel structure.

Forced-Draft Apparatus: Each furnace will have two forced-draft fans for discharging combustion air beneath the burner grates and into the stoking arms and cone. The fans will have a total capacity of 4 pounds of air per pound of refuse at rated capacity of the furnace and will be preheated.

Stoking floor: A width of 8 feet is provided at the front of each furnace for stoking purposes. Stoking doors are provided at four points in the circumference and observation doors at another four points.

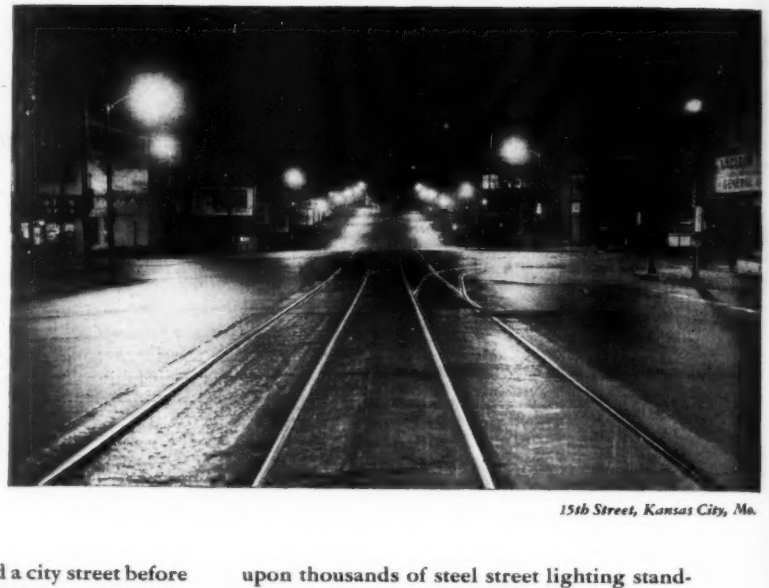
Ash handling: Ash hoppers beneath the furnaces will be equipped with water sprays for quenching the ash and with hand-operated, water-sealed, rack-and-pinion gates for discharging the ash directly into the trucks.

Flues: Flue design is based upon a maximum velocity of the gases of 25 feet per second.

Chimney: One chimney is provided, having a minimum inside diameter of 12 feet 6 inches and a height of 175 feet. It is of reinforced concrete and will have an independent firebrick lining for the entire height, the lining to be supported by a steel corset.

Work on this project commenced in June 1946, and the plant is expected to be in operation by November 1947.

MAKING LIGHT OF UNSAFE SHADOWS



15th Street, Kansas City, Mo.

ON this page is pictured a city street before and *after* traffic safety lighting. Note the startling difference—how modern lighting units on Union Metal tapered *steel* lighting standards do away with gloomy, unsafe shadows.

For over 40 years, ever since the beginnings of modern street lighting in this country, Union Metal has designed and engineered many improvements in the *steel* standards that support street lights.

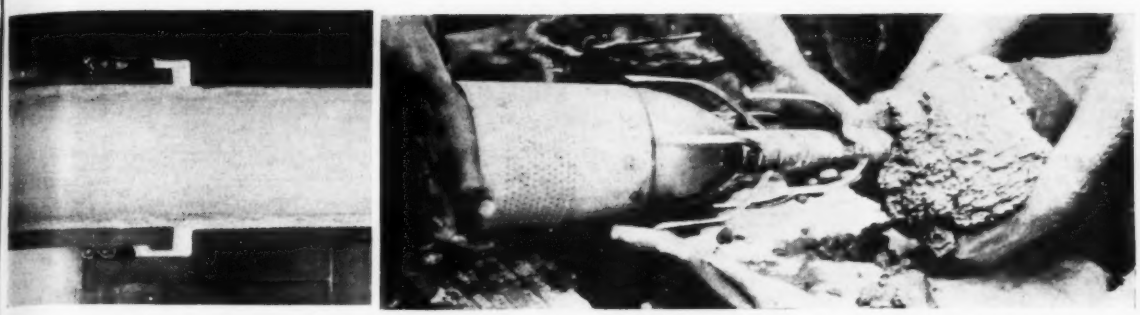
That's Union Metal's job. Proof that it's been well done is evidenced in the thousands upon thousands of steel street lighting standards that serve in cities and towns from coast to coast—friendly guardians of people, helpful guides for traffic, faithful assistants to the law.

For advantages that will pay you many times over, include Union Metal *steel lighting standards* in your community's street lighting improvement plans. They're the most economical investment you can make in long-term safety and economy. The Union Metal Manufacturing Company, Canton 5, Ohio.

We regret the present extended deliveries due to the steel shortage, but the situation is improving and you will find Union Metal lighting standards well worth waiting for.

UNION METAL

Largest Producers of Street Lighting Standards



Above right: The lining machine enters the pipe. The hand-placed mortar insures the pipe's being lined to the end. Left: The cutaway section shows how the pipe looks after lining. Notice how the joints are sealed by the mortar.

San Diego Lines Its Water Mains

Cement lining of water mains eliminates leakage and boosts water flows by 30%

By EARL F. THOMAS
Superintendent of Water Distribution
San Diego, Calif.

THE distribution system in San Diego, Calif., is composed of some 680 miles of water mains, many miles of which were installed before cement pipe-lining was instituted or became the policy of the city.

Our water supply, being fairly soft, causes tuberculation in any iron pipe that is not properly protected. Our experience leads us to believe that cement lining is the most effective method of prevention of tuberculation.

Lining Eliminated Failures

In 1943, the city contracted for the cleaning and cement lining in place by the Tate Process—approximately 18,000 feet of 4-inch and 6-inch water mains, some of which were badly tuberculated and graphitized, owing to electrolysis and soil corrosion to the extent that an average of three failures per week were being experienced in this section. Since the work was completed, there have been no further failures. Fire hydrant flows were increased in excess of 30% over former quantities, while the coefficient in the processed mains increased to 123 or better. All leakage at joints, through cracks and pits in the pipes, were stopped, and our tuberculation troubles are definitely over in the section so processed.

The Tate Processing Crew is composed of 12 men and the supervisor; the equipment consists of two winch trucks, an arc-welding machine, a compressor, a utility truck, a mixing tray, and numerous special tools.

A certain amount of preparatory work is required. The first step is that of placing a by-pass or high line for supply to the consumer of the section to be first processed, usually between two gate valves. The next is to excavate each service connection and transfer it to the by-pass; then excavate at each cross and tee. After de-watering the section, one must cut and plug each tee and cross outlet, remove all service corporations and plug them, and finally, at approximately 300-foot intervals, excavate and remove a section of pipe for the cleaning and cement-lining operations.

The cleaning process is next in line. This requires threading a flexible sewer rod through the main or pipe line, attaching a cable from a winch truck thereon to the rod, and then drawing the cable, to which cleaning tools are attached, through the pipe. Another winch truck is placed at the opposite end of the section of pipe to be cleaned, with cable also attached to cleaning tools. The cleaning tools are then drawn by winch trucks back and forth until the pipe is cleaned.

We then come to the lining operation. Cement mortar, composed of one part cement and two parts of specially selected, clean sand is used for the lining. The mortar is mixed in a large shallow pan, in quantities only as required for immediate use. Great care is noted of the moisture content, which must be almost perfect in order to properly adhere and stay in place in the pipe line. The mortar is introduced into the main by use of a load pipe, which is a steel tube extending 12 feet above the main and has a 90-degree bend at the lower end, which is attached to the pipe by a Dresser coupling. The cable from the winch truck, on the far end of this section, is threaded through the load pipe. The mortar is then passed from mixing pan to load pipe by buckets. When sufficient mortar has been poured into the load pipe to line the section, a plunger or rubber disk, attached to the cable, is pulled down through the load pipe to the main. The load pipe is then removed, the plunger is attached, and the Tate lining machine is attached to the cable and drawn through the pipe line at a speed of about 15 feet per minute, with the mortar being pressed on to the pipe wall in the form of a lining.

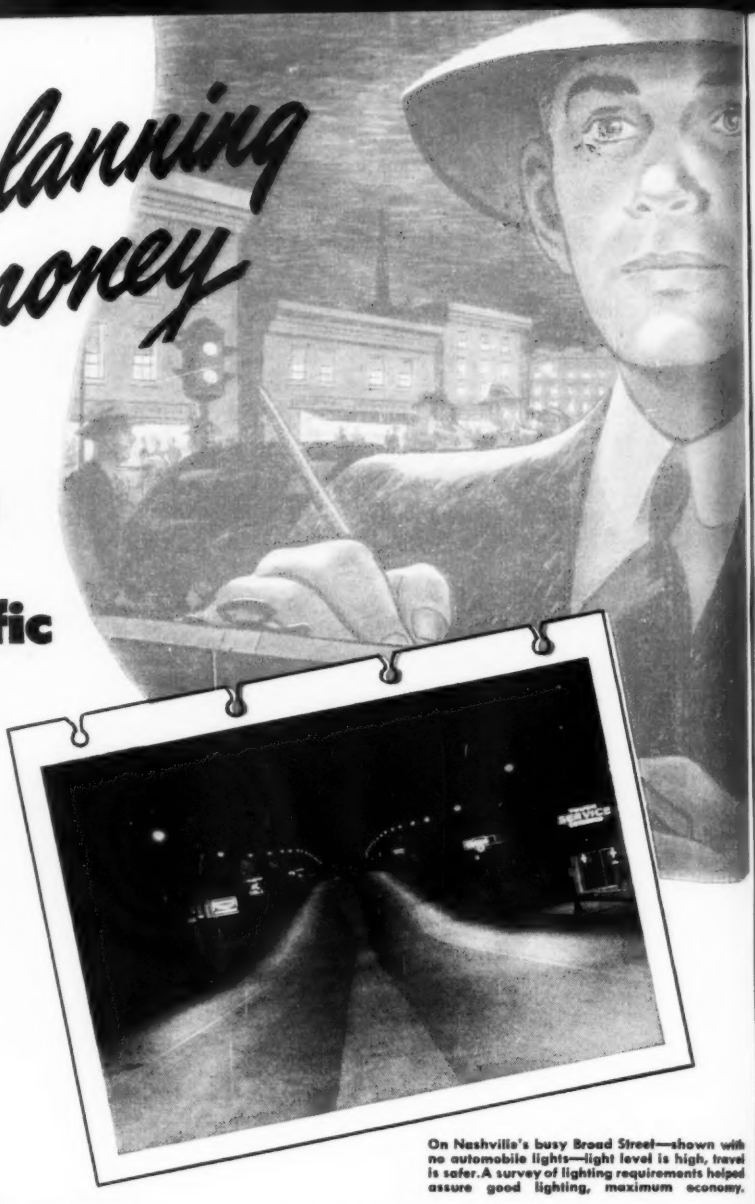
The Tate lining machine consists of a conical mandrel which has, in and around its skirt, a series of holes which serve to remove excess water from the mortar while being pressed on to the pipe wall. This skirt is slightly tapered to the tail end, in order to develop the desired pressure. The mandrel is fitted with a series of guides attached to the head which fit the pipe tightly; their function is to keep the machine centered in the pipe during its passage, thereby assuring evenness of coating. During the placing of the lining, the excess water is drained off through the holes in the skirt, bringing with it fines of sand and cement, which lie on the bottom of the pipe in the form of a flat. This flat section, in the case of a 10-inch pipe, is about 3 inches wide.

Returned to Service in 48 Hours

Tests for "C Values" on completed pipe lines do not indicate that the flat is detrimental to final results. High velocities obtained on pipe lines thus processed are attributed to the fact that the pipe lining is continuous and all joints are filled with cement mortar. Completed sections are usually returned to service within 48 hours; thus the cement lining is never allowed to dry, because best curing results are obtained while the lining is in actual service.

proper planning saved money

in relighting this heavy-traffic street



On Nashville's busy Broad Street—shown with no automobile lights—light level is high, travel is safer. A survey of lighting requirements helped assure good lighting, maximum economy.

lighting survey, a service available to all communities, helps Nashville, Tennessee, get Code-quality lighting with greatest economy.

When Nashville, Tenn., widened and repaved three miles of main street they requested General Electric to survey street-lighting requirements.

Specifically, Nashville wanted lighting at least equal to the 0.8 footcandles specified by the I.E.S. Code. To keep down initial cost and maintenance, they wanted the minimum number of luminaires consistent with uniform light distribution over streets as wide as 90 feet. And—they wanted equipment which could be standardized for other types of streets.

Following an on-the-spot survey, General Electric recommended spun-sealed refractor-type Form 79R Luminaires—which fully met Nashville's requirements. With 10,000-lumen lamps, 100-foot spacing, and an opposite arrangement, they gave just over 1.0 footcandles—with the minimum number of luminaires. This luminaire has top efficiency, provides excellent light distribution, results in rock-bottom maintenance, and can be used with 10,000- or 6,000-lumen lamps on all of Nashville's main-traffic streets—as has been shown in a subsequent G-E survey of the entire city.

When You Contemplate New Street Lighting

The service furnished Nashville is typical of that provided for scores of cities. General Electric will be glad to help any public officials—in collaboration with the electric utility—in working out requirements for a single corner or an entire city. Qualified specialists are located in G-E offices throughout the country.

General Electric makes every type of light source and luminaire that is economically feasible for any street lighting job, and is therefore sincerely interested in seeing that users get equipment that best meets their needs. *Apparatus Department, General Electric Co., Schenectady 5, N. Y.*

GENERAL ELECTRIC

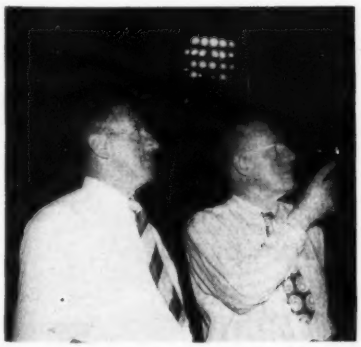
Outdoor Lighting

This new lighting installation at Riverview Baseball Park is said to be the finest in the Colonial Baseball League.

Poughkeepsie Provides Night Baseball

By FRANK M. DORAN, *Mayor*

FLIP of a switch on July 17 instantly brought to night-life the municipally owned Riverview Baseball Park in Poughkeepsie, N. Y. Those who had been concerned with its planning, financing, and construction sighed happily. Among these was the City Council, who had backed the project with a bond issue.



Mayor Frank M. Doran (right) and Park Commissioner John J. Gartland inspect the new floodlights.

Providing foundations for the tall Union Metal monotube steel floodlight poles was no small engineering challenge. Soil conditions necessitated placing piles under the concrete foundation. A row of buried elm stumps in a strategic location added to the headaches. Meanwhile, an exceptionally rainy spring season made necessary the repeated postponement of foundation excavation because of drainage problems.

The lighting installation is the finest in the Colonial Baseball League. A total of 240 General Electric sports floodlights illuminates the entire playing field to an average intensity of 40 footcandles. At the base of the twin poles, just beyond first- and third-base positions, are 100-kva transformers. At the bases of the two remote outfield towers are 75-kva transformers. Enclosed in steel housing and surrounded by chain link fences, the transformers are fed by underground cable in prefabricated concrete ducts. The 1,500-watt lamps are burned at approximately 10% overvoltage, giving a total load of 418 kw for the field. Anticipated lamp life is about 300 hours, enough for two normal seasons of operations.

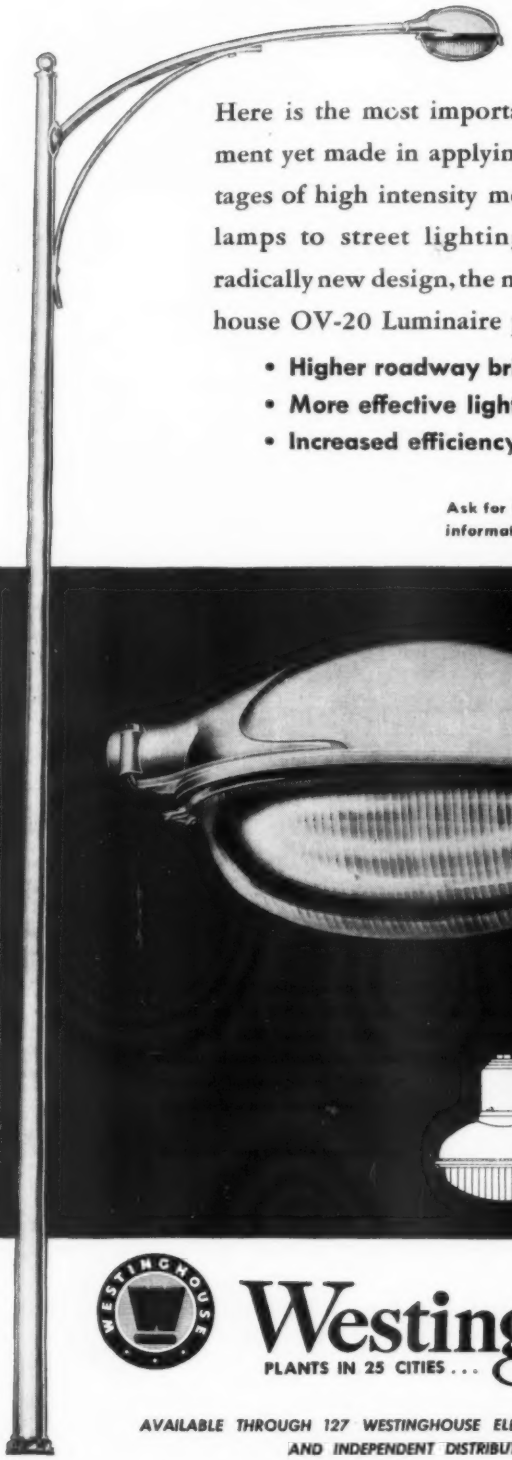
For accurate aiming of the floodlights, G-E engineers worked out a chart showing the horizontal- and vertical-angle setting for each of the 240 floodlights, which would result theoretically in uniform lighting over the entire playing area. Floodlights were then set at these angles, while the poles were lying flat on the ground. Foundation bolts were accurately cast into the concrete, and the poles were hoisted into place by a heavy boom. Only minor adjustments were necessary after the lights were turned on.

In providing this modern installation for the community, the city feels it has taken a long step in keeping with the nation-wide trend toward lighting recreational centers for night use.

An Entirely NEW LUMINAIRE

designed specifically for

MERCURY LAMPS



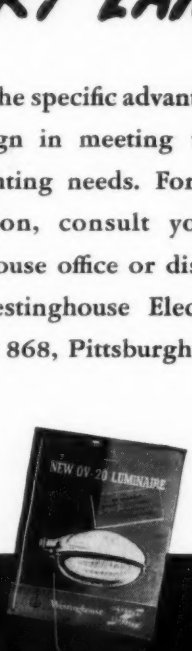
Here is the most important advancement yet made in applying the advantages of high intensity mercury vapor lamps to street lighting. Through radically new design, the new Westinghouse OV-20 Luminaire provides:

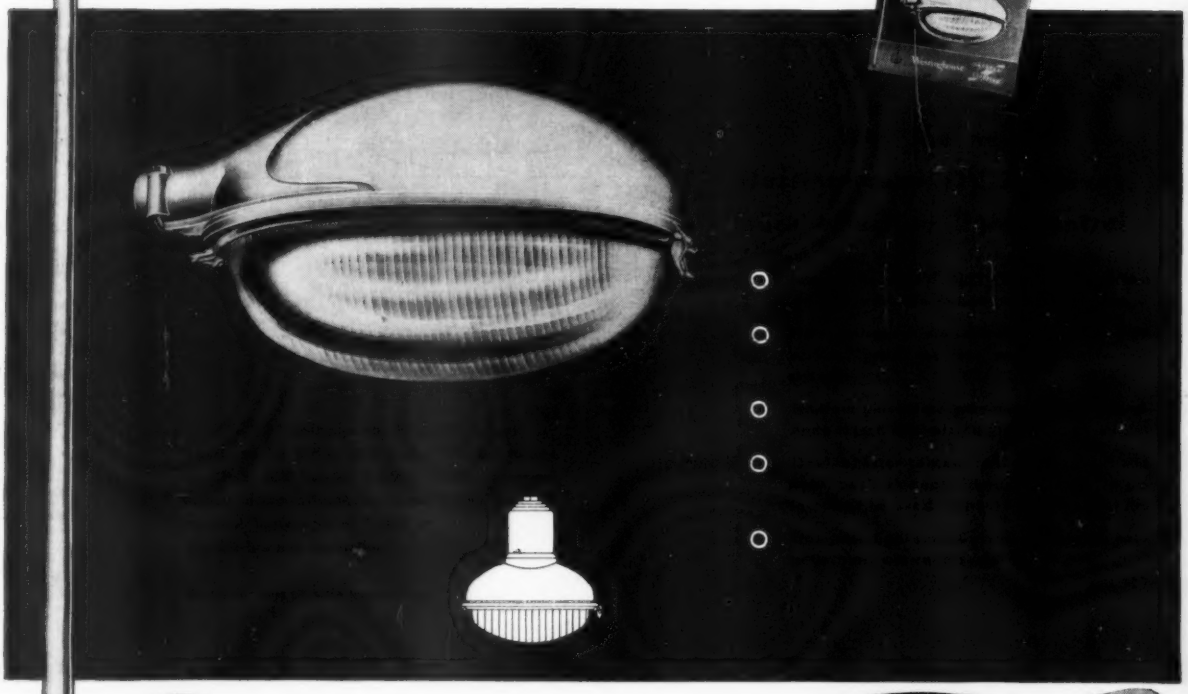
- **Higher roadway brightness**
- **More effective light control**
- **Increased efficiency**

Check the specific advantages of this new design in meeting tomorrow's street lighting needs. For additional information, consult your nearby Westinghouse office or distributor or write: Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

J-04113

Ask for bulletin B-3790 which gives complete information on the new OV-20 Luminaires.





Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

PLANNED LIGHTING

AVAILABLE THROUGH 127 WESTINGHOUSE ELECTRIC SUPPLY OFFICES AND INDEPENDENT DISTRIBUTORS

Street Lighting Visibility Evaluated

By KIRK M. REID *and* R. J. DIEFENTHALER
General Electric Company
Cleveland, Ohio

ADEQUATE street lighting for night traffic safety is not lighting that is equal to natural daytime illumination. However, illumination for visibility must be produced at least to that degree which is of direct safety value to the motorist and pedestrian. Evaluation of visibility on lighted streets requires determination of three principal factors: the brightness of the pavement at various points as seen by the motorist; the brightness of representative obstacles on and near the roadway; the veiling glare attributable to the lighting installation.

To facilitate research on the amount of illumination necessary for street and highways, an elaborate ⅛-scale, 250-foot test-model roadway was constructed, which represented 2,000 feet of roadway. Because of its flexibility and controllability, data were obtained in one-tenth the time required in tests on actual roads. From a year's work the following contributions were derived:

- There are no significant differences in visibility for sodium-vapor, mercury-vapor, or filament lamps, when used in lighting systems which provide equal amounts of light, similarly distributed.
- On straight and level thoroughfares with typical lighting methods, discernment of obstacles on the pavement is approximately 70% by silhouette and 30% by obstacle brightness. Obstacles near the pavement edge of such roadways are seen principally by their own brightness, as are obstacles on or near the pavement on curves and hill crests.
- Contrary to popular opinion and impression, the provision of uniform illumination does not necessarily result in a uniformly bright surface as viewed by the motorist.
- Glare from lighting systems causes a veiling effect that reduces the seeing value, or the effectiveness of illumination on the roadway. This loss may even exceed 50% of the maximum available effectiveness.

Tests Conducted

Because obstacles are most frequently seen on the roadway by silhouette, the background must be brighter than the object. The most satisfactory condition is that of uniform pavement brightness. A comprehensive study was undertaken to determine the candlepower distributions that would provide an adequate, uniformly bright pavement surface. Reflecting characteristics of actual travel-worn pavements were obtained by cutting 2-foot-square samples from traffic lanes of concrete, brick, and asphalt roadways. With the data thus obtained, the desired candlepower distribution from luminaires can be calculated, and the brightness pattern from a lighting system can be predetermined.

A test transparency was designed to obtain data converting values of pavement and obstacle brightness into the visibility of significant pavement details and roadside obstacles. Lane markers, curbings, and surface irregularities are significant pavement details; pedestrians and vehicles are the important obstacles on the roadway. Visibility measurements were made of the center line marker and the disc, since the pavement background varied in brightness from 0.01 to 2.0 foot-lamberts. The brightness of the line and disc was virtually zero.

Obstacle Brightness

Additional measurements of obstacle visibility were made for contrast of less than 100% by illuminating the front of the opaque disc to various brightnesses. These lower contrasts, as obtained with a plane test obstacle, are of limited practical significance, because the surfaces of nearly all real obstacles are rounded or multiplaned and present gradations of brightness that facilitate discernment. In those cases where an obstacle has such a brightness as to reduce the contrast and thus the visibility of its lower portions, its upper extremities usually have adequate visibility by reversed silhouette and surface detail. Vertical surface illumination and obstacle brightness are favorable factors in evaluation of roadway visibility.

When the light from all glare sources in the field of view illuminates a translucent screen of the proper characteristics, the brightness of this screen then represents the veiling brightness produced by the glare sources. The screen brightness can be measured readily and calibrated in terms of the reduction in visibility caused by the glare sources.

Equipment was used also to obtain the correlation between the veiling brightness of overhead glare sources and the resultant reduction in visibility. A glare source was mounted above the pavement in a position representing a luminaire. Graduated apertures were rotated at several speeds in front of the source to simulate the glare encountered while driving at various speeds along a roadway illuminatel with representative fixed equipment. The reduction in seeing efficiency caused by the discomfort, strain, and fatigue induced by glare has not been measured directly.

Street Lighting Evaluated Simply

The mathematical relationships developed from this research have been utilized in the design of a calculator that facilitates visibility calculations. The scales have been arranged in accordance with the relationship established between visibility and pavement brightness, obstacle brightness, and glare or veiling brightness. After the three brightnesses have been measured, the solution is merely one of performing a slide-rule-type operation with the calculator.

These studies of the factors affecting visibility have culminated in the development of the General Electric Street Lighting Evaluator. The control equipment is carried inside the car beside the observer; the unit on the hood of the car is used to measure pavement and obstacle brightnesses; the glare-integrator above the windshield measures glare in terms of veiling brightness. A chart card is inserted into the control box, and, as each brightness is obtained, its value is mechanically recorded on the proper brightness scale. A simple computation with the calculator will determine the net visibility for the locations at which the measurements were made. The average visibility might reasonably be considered as that obtained by averaging values of pavement brightness, obstacle brightness, and glare for representative locations over the street area. The minimum visibility results from combining the least favorable pavement and obstacle brightness with the maximum glare condition. This represents the worst possible condition under which the motorist might be called upon to see. Values of highest, average, and lowest visibility must be considered in the over-all appraisal of any system.

This new method of visibility evaluation makes possible the design and application of luminaires to obtain from each road condition the maximum visibility per dollar of total cost. It permits determination of the percentage of lighting adequacy for given conditions of street and traffic. And, for the first time, statisticians can analyze traffic accidents in relation to visibility.

Honolulu Rapid Transit to Expand...

The Honolulu Rapid Transit Company, which operates 115 trolley coaches over two main-line transit routes, plans to convert another heavy-traffic line to this popular service. The line to be converted, the Nuuanu-Punahou, covers 10.2 round trip miles and is now being operated with motor buses. After the Black Sunday of December 7 brought the Jap planes and war to Hawaii, additional trolley coaches were purchased and "enlisted" in National defense. These coaches, part of the system's present fleet, will be used to operate the new line.

There are good reasons why trolley coaches were selected as ideal vehicles to operate this line, which transports over 7,500,000 passengers annually. According to a statement recently made by an HRT official: *"Through nearly ten years of peacetime service and front line combat duty, trolley coaches have proved to be the most popular units of our Silver Fleet. They are also the most efficient, dependable and economical vehicles operated by this company in its 46 years of public service. These are the reasons why we plan to expand this popular service."*

TROLLEY COACH AND STREET CAR MATERIAL AND CAR EQUIPMENT

Ohio Brass

MANSFIELD, OHIO

CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONTARIO

2809-T

Lighting Costs in Capital Cities

Hartford's Rates Include Mileage Charges

HARTFORD'S 5,357 street lamps are lighted at a yearly per capita cost of $1.45, a total of $242,000. All street lighting is furnished by the Hartford Electric Light Company. The electric lamps range from 2,500 lumens to 15,000 lumens, while the sodium-vapor lamps are in the 10,000-lumen group.

There are 2,473 lamps of 2,500 lumens on wood poles. The cost of those with overhead wiring is $16.20 per lamp per year, and of those with underground wiring, $20. The 575 lamps of 4,000 lumens cost from $28 for those on wood poles with overhead wiring to $48 for those on ornamental poles with underground wiring. In the 6,000-lumen group are 314 lamps on wood poles with overhead wiring which cost $36; 1,249 lamps on wood poles with underground wiring at a per-lamp cost of $44; 163 lamps on ornamental poles with underground wiring, which cost $72; 364 ornamental lamps with underground wiring at a cost of $80 per lamp per year. Of the 10,000-lumen lamps, 162 are on wood poles with underground wiring at a cost of $60, while the 8 with overhead wiring cost $52. The 15 lamps of 15,000 lumens on ornamental poles with underground wiring cost $93 per lamp yer pear.

There are 22 sodium-vapor lamps of 10.000 lumens on ornamental poles with underground wiring, costing $64 per lamp per year. The charge for 12 other 10,000-lumen sodium-vapor ornamental lamps is $122 per lamp per year.

In addition to the regular lamp charges, there are mileage charges of $165 per mile per year for overhead mileage and $650 per mile per year for underground mileage. Included in the yearly expenditure of $242.000 is the total mileage charge of $56.720.

R. W. THOMPSON
Superintendent of Streets
Hartford, Conn.

Boston's Lighting Costs

IN BOSTON, the total annual cost of all street lighting is $975,012, a per capita cost of $1.27. Boston has both electric and gas lamps. The equipment and energy for the electric lamps are supplied by the Boston Edison Company, while the city owns part of the gas street-lighting equipment. These 23,103 lamps supply light for 900 miles of streets.

There are 9,020 gas lamps of 60-candlepower, costing $23 per lamp per year. Electric lamps range from 200 to 15,000 lumens. The cost per lamp per year is the same for lamps on wood poles with overhead wiring as it is for those on metal poles with underground wiring. There are 21 series 15,000-lumen twin lamps which cost $150 per lamp per year. The 7,574 lamps of 10,000 lumens, both series and multiple, cost $75.50 per lamp per year. The 729 lamps of 6,000-lumens cost $65, and the 13 lamps of 4,000 lumens, $57. There are 5,417 lamps of 800-lumens which cost $20.50 per lamp per year. The other costs range from $24 per lamp per year for the 60 lamps of 200 lumens to $39 for the 118 lamps of 2,500 lumens. The 200-lumen lamps are fire-alarm lamps and are on 24-hour operation.

ROBERT P. CURLEY
Commissioner of Public Works
Boston, Mass.

Denver's Lighting Costs

DENVER'S 7,871 street lamps — a variety of incandescent sodium-vapor and mercury-vapor lamps—light the 1,056 miles of lighted streets at a per capita cost of $0.87, a yearly total of $280,000.

The incandescent lamps range from 1,000 lumens to 6,000 lumens. In the 1,000-lumen group are 1,226 series lamps and 145 multiple lamps, for which the cost per lamp per year is $18.60 for those on wood poles with overhead wiring and $17.40 for those on metal poles with underground wiring. Among the 2,500-lumen lamps are 460 single and 85 multiple—the cost per lamp per year being $28.80 for lamps on wood poles with overhead wiring and $26.40 for those on metal poles with underground wiring. There are 85 multiple and 2,499 series lamps of 4,000 lumens, which cost $33 per lamp per year for those on wood poles with overhead wiring and $31.20 for lamps on metal poles with underground wiring. In the 6,000-lumen group there are 1,898 multiple lamps and 84 series lamps, for which the cost per lamp per year is $39.60 for lamps on metal poles with either overhead or underground wiring.

The sodium-vapor lamps are of 10,000 lumens and consist of 86 series lamps and 10 multiple. The cost per lamp per year for these is $58.20 for lamps on wood poles with overhead wiring, and $51 for those on metal poles with underground wiring.

There are 1,378 mercury-vapor lamps of 16,000 lumens, 126 of which are series and 1,252 multiple. Of these, lamps on wood poles with overhead wiring cost $58.20 per lamp per year, and on metal poles with underground wiring $51.

Equipment and energy are supplied by the Public Service Company of Colorado. The cost of lamps on metal poles with overhead wiring is the same as the cost for those with underground wiring.

EDWARD A. SMITH
City Engineer
Denver, Colo.

Lighting in Washington

IT costs $774,500.65 yearly to light the 980 miles of lighted streets in Washington, D. C. — a per capita cost of $1.17. The street lighting system is made up of 35,476 lamps: 7,279 of 600 lumens; 3,111 of 1,000 lumens; 14,853 of 2,500 lumens; 3,702 of 4,000 lumens; 2,794 of 6,000 lumens; 2,456 of 10,000 lumens. Of these lamps, 22,539 are city-government-owned, 11,342 utility-owned, 1,564 trolley-railway-owned, and 31 Federal-Government-owned. Last year, an additional 154 lamps were added, which increased the lighting costs 3,967.55.

The 600-lumen lamps on wood poles with overhead wiring cost $7.75 per lamp per year, while those on metal poles with underground wiring cost $13.85 on city-owned poles and $15.50 on utility-owned poles. The cost of a 1,000-lumen lamp on wood poles with overhead wiring is $8.55 per lamp per year. For those with underground wiring on metal poles, the cost is $18.80 for city-owned poles and $18.25 for lamps on utility-owned poles. The expense of a 2,500-lumen lamp varies from $14.20 for lamps with overhead wiring on wood poles to $25.75 for lamps on utility-owned metal poles with underground wiring, and $27.40 for lamps on utility-owned metal poles. For 4,000-lumen lamps, the cost per lamp on wood poles with overhead wiring is $19.15, and, for those with underground wiring on metal poles, it is $31.50 on city-owned poles and $33.15 on utility-owned poles. Costs for the 6,000-lumen lamps on metal poles with underground wiring vary from $32.35 for the twin lamp on city-owned poles to $37.60 for the lamp on utility-owned poles. The 10.000-lumen lamps on metal poles with underground wiring cost $45.10 for city-owned poles and $40.60 for twin lamps on city-owned poles. Rates for lamps with the ball-type globe are cheaper than those with the Washington-type globe. On trolley-railway poles, there are seven 10,000-lumen sodium-vajor lamps; each costs $58.45 yearly.

H. C. WHITEHURST
Director of Highways
Washington, D. C.

GOOD STREET LIGHTING

A civic benefit you can measure in better business

HERE'S a test you can make yourself. Tonight, walk down a dimly lighted street in your own or some neighboring business section. Note how few people you meet. Note, too, how uninteresting the store windows look.

Next, for comparison, walk down a brightly lighted street. Count the many extra window shoppers you see. Observe how much more attractive is the merchandise displayed.

Yes—the experience of towns and cities across the nation has been that good street lighting encourages people to go out after dark . . . to attend the movies, window shop for wanted items, patronize the corner soda fountain or restaurant.

The many other benefits of good street lighting . . . the accidents it averts, the lives it saves, the crimes it prevents . . . come to you as an *extra* bonus.

You can get helpful information and ideas on how to promote traffic safety in your community by contacting your local electric utility—and from the new, useful case history booklet "Evidence", published by The Street & Traffic Safety Lighting Bureau, 155 E. 44th Street, New York City.

GOOD STREET LIGHTING

THE SIGN OF A GOOD PLACE TO LIVE

L-M *Announces*

a complete lighting package for Class I, II, and III airports

L-M Elevated Runway Lights: set at 200-foot intervals along runway, and, with green screens, across end, as range lights. Two-piece refractor produces 360-degree horizontal and 180-degree vertical light distribution; almost glare-free. Taps on control transformer provide three steps of brightness—remotely controlled. Easy to install, highly efficient.

L-M Obstruction and Marker Lights: Red lens. Furnished with or without transformer in base, as required. Many parts interchangeable with runway lights.

L-M Rotating Beacon: CAA-approved for class I and II and limited class III airports. Two standard 100-watt sealed beam units provide rotating beam from 110,000 to 400,000 cp.; life up to 4000 hours. Ceiling height indicator and locator beam set at 5 degrees from vertical. Spare lamps switch on automatically with telltale to control tower. Light weight, only 75 pounds; pole or roof-top mounting. Long life low speed motor. Entire unit requires only 325 watts. No exposed moving parts.

Bartow type 36″ Rotating Beacon: CAA-approved for class III to VII airports. Large rotating glass sphere produces one vertical and four horizontal 6-degree beams. Two adjacent 24″ bullseyes produce high candle power beams elevated 1.25° above horizontal. Two Fresnel lenses tilted 12° above horizontal produce secondary wobbling beams visible up to 24° above horizontal. Bullseye on top of beacon produces wobbling beam 7 to 12° from vertical. Beam angles adjustable. Clear primary beams; choice of clear, green, or red secondary beams. 1000-watt lamp; magnetic lamp-changer switches to spare lamp if primary lamp burns out, and energizes telltale to control tower. Silico-aluminum base; 1/6-hp. ac. motor drives beacon at 6 rpm. through safety clutch and worm. Heavy duty ball lower bearing; heavy duty tapered roller upper bearing; give 7 to 1 safety factor. For other details, features, write for Bulletin.

L-M Power Unit and Control Panel: all necessary equipment, switches, brightness controls, runway selector switches; main breaker, runway breaker, five accessory breakers for windsock, beacon, etc.; indicator lights; transformer; fuses.

L-M Cable Splice Kit: for 2, 3, or 4 cables; greatly simplifies connections in making installation. *Cable* for primary: 600-volt single conductor insulated cable in standard reels ready to cut to exact length on the job. Primary cable and bare neutral are laid together in ploughed trench, and connected with cable clamps provided on lights.

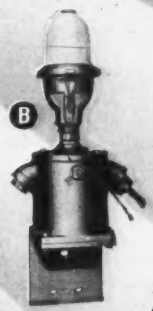
All other equipment required—transformers, fuse cutouts, potheads, connectors, etc. L-M Engineers will design your job, list the required equipment, supply layout and complete wiring diagram.

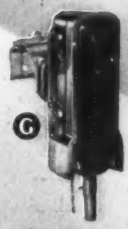
The new L-M Airport Lighting Package makes available a complete, highly efficient lighting system at an average cost of about $1 per runway foot for the entire equipment.

The L-M system meets latest CAA specifications for small airports, permitting the use of federal funds to finance the installation.

This equipment is designed by airport lighting engineers, men who fly, who know pilots' problems in landing in all kinds of weather, and know airport operating problems.

Note the list and brief description of equipment. Then write for the bulletins you need. When you are ready, the services of L-M airport lighting engineers will be made available to help you plan your installation.





"Open All Night" describes the new L-M package for class I, II, and III airports.

"L-M Rotating Beacon for Class I and II Airports" describes in detail the construction, operation, and simple installation of this highly efficient, weatherproof beacon.

"Bartow Rotating Beacon" describes the big 36″ beacon for class III and larger airports.

"The Lights that Bring Them In" is a brochure for large airports describing the principles of the famous Bartow High Intensity Approach and Runway Lighting System.

Also available are detailed diagrams and specification sheets and wiring diagrams for individual equipment and the entire systems. *Address Line Material Company, Airport Lighting Division, East Stroudsburg, Pennsylvania.*

LINE MATERIAL
AIRPORT LIGHTING

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Capacitors

WHEN AMBULANCES CAN'T GET THROUGH...

Ease serious congestion — encourage public transit

A recent magazine article states that, in one large midwestern city, a person injured downtown could get to the nearest hospital faster in a wheelbarrow than in an ambulance. A little far fetched perhaps, but certainly traffic congestion is wreaking havoc in every sizable city. It's costing New York a million dollars a day in loss of time and money. In Baltimore it's $14,000,000 a year and in Boston, $25,000,000 a year.

If you're fed up with bottlenecks, automobile accidents, blighted areas, and costly street widening, here's a quick and permanent way to cut traffic congestion. Help your public-transit officials provide good service and urge them to tell your citizens about the benefits of using public transit.

Public Transit Uses Street Space Most Efficiently

Because swift public carriers accommodate an average of 50 persons per vehicle, a transit rider needs only 70 square feet of street space. Based on the automobile's average carrying capacity of 1.75 persons, an automobile rider requires 500 square feet. Thus, every time a driver leaves his car at home and rides by transit, 430 square feet of street space is released to speed all traffic.

Public Transit Needs No Parking Space

The parking space required by a transit rider is zero. On the other hand, an automobile passenger needs 140 square feet—almost as much space for parking as he needs for working.

For all those reasons, why not make a date right now with your G-E transportation specialist and local transit officials to develop increased transit riding. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC 107-230

Have you seen *Lifestream of the City*, the movie that shows how to reduce traffic congestion? Ask your G-E representative to arrange for a showing.

New Dearborn Control System

By F. A. PEARSON
Assistant Chief Engineer
Eagle Signal Corporation
Moline, Ill.

THE CITY OF DEARBORN, Mich., recently completed installation of a new traffic control system on Michigan Avenue in the west end of the city. It is a new design, with a three-dial system that favors incoming traffic in the morning, as thousands of people are coming to work, and speeds outgoing traffic as they go home in the evening. Between these rush hours, the signal system operates at the best general settings for ordinary traffic.

System Flexible

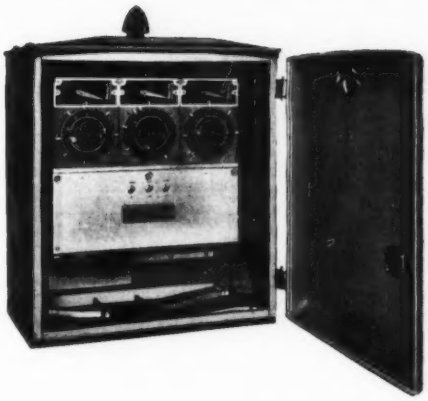
In working out this new traffic control system, O. J. Carrier, Michigan representative of the Eagle Signal Corporation, received the benefit of the years of experience of Marion Henry, Superintendent of the Signal Bureau, Dearborn. What Mr. Henry wanted was traffic-signal equipment that would remain in effective operation through all kinds of weather, throughout the year.

The system is a flexible, progressive, interconnected type using three-dial local intersection controllers at each intersection and is supervised from the master control panel located in the West Dearborn Municipal Building.

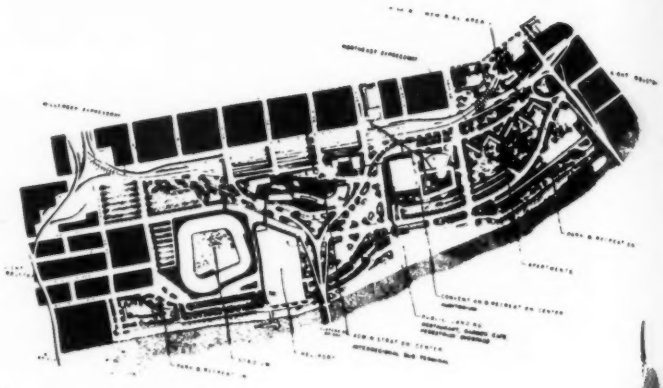
The master controller has three independent master-timer units permitting maximum flexibility. Each of the three units on the master timer and on all local controllers may be operated on a different total-time cycle without the necessity of initiating a change on all dial units, as would be required if all three-cycle dials of the local controllers were driven by a common motor.

The fire department emergency signal provides an all-red signal at all intersections of the fire lane, preceded by an adjustable timed interval of all-amber. The automatic timing of this all-amber interval is controlled by a synchronous, automatic-reset "Microflex" timer located on the master control panel. The operation of this unit is initiated by remote control from the fire department. At the expiration of the all-red emergency-signal feature of the system, all signals of the system resume "go-stop" operation in proper coordination with each other.

The master panel incorporates a weekly schedule program clock, together with three master-timer elements: complete remote-switching equipment, pilot lights, and automatic timer for control of the fire department emergency signal. The program clock operates on the general principle of the school program clock which automatically convenes and dismisses different classes at different times in accordance with their programs. The clock permits setting up a complete traffic-signaling schedule for an entire week. The main advantage of this clock is flexibility in connection with the transferring of operation among the three dials of the local controllers. Each circuit of the clock provides an adjustment for 20-minute intervals, thus making possible as many as 72 operations per day of each circuit. This flexibility allows the automatic transfer between timing dials of the entire system to meet the various rush-hour traffic conditions during each day of the week. In addition, the clock provides for automatic transfer of



Above: Brain of the new Dearborn progressive traffic-signal system. Marion Henry, Superintendent of the Signal Bureau, points to the programming device that determines all signal operations for an entire week. The interested listener is Mayor Orville L. Hubbard. Right: The three-dial intersection controller.



Cheat *death* when you plan

The great City Planners and Traffic Engineers of *today* are the *life savers* of tomorrow.

They are choosing the PRISMO LIFE LINE, because to them it means:

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The most in visibility
The most in durability
The most in economy

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PRISMO LIFELINE is the *modern* reflective material for highway, road and street markings. Prismo is standard in many states, cities and counties for all danger points, including no-passing zones, fog-lining and municipal marking. PRISMO—*guides by day . . . protects by night.*

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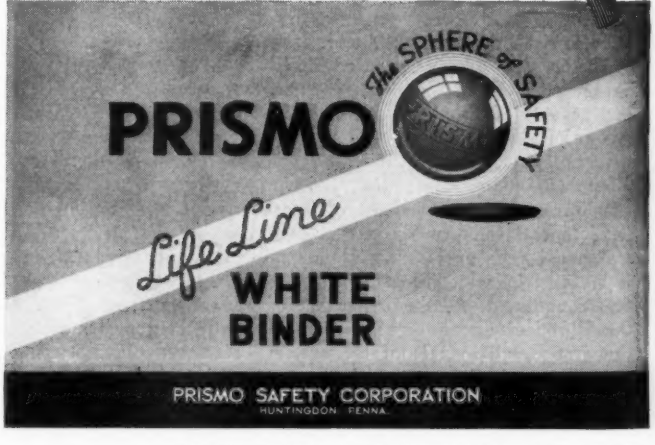

*Write for Bulletin 461 (Prismo Life Line) and for Bulletin 547 (Prismo Sign Kit).

the system from "go-stop" operation to flashing night-light, and vice versa. This operation may be set for varying times for each evening and morning of the week. The weekly-schedule clock rotates through the complete weekly schedule and then re-sets at midnight Sunday to repeat its operations for the succeeding week.

Local Intersection Controllers

Each of the three dials of the local controller is set up to give any desired length of "green" for the main and the cross street at that particular intersection. Each of the three controller dial units may be set up to give signal timing adapted to that particular intersection for any part of the day.

Of particular interest to traffic engineers and servicemen are the unit-type construction of the local intersection controllers (independently motor-driven cycle units) and the spacious sectional cabinet. Special attention was given to the location and mounting of the units and accessories in the cabinet and mechanism housing to permit maximum accessibility and convenience in servicing.

Each Cycle Unit Complete

Each of the individual cycle units is a complete mechanism in itself, incorporating its own synchronous, slow-speed, disc-type, magnetic-clutch-controlled motor. These independent-cycle dial units are electrically jack-connected and mechanically jack-mounted to the controller housing. This arrangement permits the controllers to be used as one-, two-, or three-dial controllers by simply removing cycle units. It permits removal of one or two of the cycle-dial units while the controller is operating on the third complete dial unit, a feature which is invaluable to convenient servicing of the timer. Electrical connections between each cycle-dial unit and the main mechanism of the controller are accomplished through flexible cable and connector socket-and-plug assemblies.

The controller provides for 15 signal circuits and up to 16-interval operation. Signal contact fingers are the ball-and-socket type. They have adjustable contact pressure and have been available in Eagle controllers for many years.

Transfer of operation between dial units of the local controllers is controlled through new-design jack-mounted latch-type relays. These relays incorporate cotton interweave coils and are responsive to control from the master timer. Transfer of dials is arranged to occur always in the main-street green-signal condition.

Flashing night-light feature of the local controllers is obtained through an independent, unit-type flasher assembly. This unit is mounted in the rear of the cabinet, in back of the control mechanism, and is also jack-connected to the wiring harness from the signal-terminal blocks. The flashing unit is remotely controlled from the master timer. However, a local switch is provided on the controller for switching the signals to "flash" independently of the remote-control weekly-schedule clock at the master timer. The purpose of this arrangement is to provide flashing-signal protection for the intersection, should it be desirable to shut down, remove, or exchange the controller mechanism. Under such circumstances, it is not necessary to have the signals dark for even an instant, as they can be transferred to flashing amber, or the combination of flashing amber and flashing red, while the timing mechanism is out of the cabinet.

The City of Dearborn, through its Superintendent of Signals, is receiving the first benefit of several years of Eagle Signal Corporation research. Mr. Henry's long years of field experience are reflected in the new designs. The unit construction of the controller permits conversion to meet future demands. Each unit is a complete one and can be replaced readily without tools. The problems of the serviceman were uppermost in the minds of Marion Henry and the company engineers, as was greater facility in controlling traffic under most difficult conditions.

Which Big Cities Are Most Traffic-Conscious?

WHAT major American cities merit top rank with respect to their planning and achievements toward traffic facilitation and safety for the automobile age? That question was popped recently at the editors of THE AMERICAN CITY. Even with a large quantity of comparable data available in the case of each city, the matter of rating them would be something in the nature of judging a beauty contest. Some would be impressed by the amount of planning of construction of freeways. Others would look more to accomplishments in providing adequate parking space and improvements in mass transportation, or the revision of the traffic signalling system, or the installation of traffic safety lighting.

Discussions of this subject with certain engineers, prominent in the field of traffic control and facilitation, developed points of view from consideration whereof we have arrived at a listing of the following eleven cities among which we would divide the honors:

Los Angeles
Pittsburgh
Detroit
Philadelphia
Kansas City
Milwaukee
Dallas
Houston
Washington, D. C.
Chicago
Cincinnati

Los Angeles has been active in providing freeways, parking areas, and setting up one-way streets including six-lane streets made one-way.

Pittsburgh is said to have done more planning than almost any other city. Its congested downtown district has compelled "no parking" regulations for a long time. In addition, there is a $35,000,000 parking project for which legislation has been passed.

Detroit is a pioneer city for traffic-safety lighting, has ample parking control, and recently removed street cars from a heavily traveled route. It also has a fully developed project for an underground parking garage in the central district.

Philadelphia put into effect one of the most drastic regulations for "no parking" on major streets in the business district. The city has appropriated $300,000 for new traffic signals and a street lighting system.

Kansas City, Mo., has made recent improvements in street lighting and, in the matter of parking, claims to have a balance between spaces needed and spaces provided. The latter achievement is ascribed to Harry Rubin, principal operator of parking lots in that city. Two recently widened streets provide better access to the central area.

Milwaukee's Downtown Association has been successfully active in the matter of providing parking facilities. It is said that traffic measures have been taken on the basis of the best study yet made of the origin and destination of vehicles entering and leaving the central business district.

Dallas prohibited parking, speeding traffic 26% in the peak period, and designated one-way streets in the downtown district. The local transit company changed over from street cars to trolley coaches, and elaborate plans are under way for a huge fringe-parking facility tied to the central business district by shuttle transit service.

Houston has recently employed a

Naturally PARK-O-METER

goes into the biggest, most important Cities . . .

Again, PARK-O-METER *wins against the field!*

As America's important cities move to answer their parking problems they choose Park-O-Meter . . . the modern, automatic meter that serves every need today *and tomorrow.* Look at them: Washington, Buffalo, Toledo, San Francisco, Dayton, Dallas, San Antonio! Thousands of gleaming new Park-O-Meters appear on the streets of America every month! It's a landslide for this most efficient meter because its automatic action, with universal time and coin adjustments, greatly simplifies maintenance and collection. On streets . . . in parking lots, Park-O-Meter has the answer for every time limit from ten minutes to ten hours!

ASK FOR LITERATURE AND/OR DEMONSTRATION

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OKLAHOMA CITY 2, OKLAHOMA

traffic engineer with a salary in five figures.

Washington, D. C., is the only city with a Parking Authority. For a number of years the District of Columbia has been active in trying to keep up with traffic congestion. Measures taken include the installation of parking meters, the development of the pedestrian-type signals at intersections, and the improvement of traffic flow at intersections and traffic circles. The District recently motorized its entire traffic set-up in the department of traffic and motor vehicles.

Chicago long has had competent traffic-engineering ability, and its efforts have included the first installation on a major scale of the progressive traffic-signal system and the abolition of parking in the Loop district.

Cincinnati has extensive plans for freeways, some of these including mass transportation facilities. Widespread consideration has been given to the designation of one-way streets. The local transit company cooperates fully with the objectives of city government.

While reduction in traffic accidents and traffic safety generally is not a factor in a classification such as the foregoing, it may be interesting to note that four of the cities listed above were cited in the 1946 National Traffic Safety Contest. These cities were Washington, Detroit, Cincinnati, and Milwaukee.

And by the way, reader, what would be your list and why?

Trolley Coaches Preferred By Public

TO THE one-half million people living and working in greater Providence, R. I., UER stands for the United Electric Railways Company. More than half of all the rolling stock consists of 280 trolley coaches, 62 of which were purchased this year from Pullman-Standard's Osgood Bradley plant in Worcester, Mass.

There are several good reasons why trolley coaches are being given such a prominent part in UER's modernization plan. There is no question that the trolley coach is the mass transportation unit of the future. They are quiet, are solidly built and speedy, and the public welcomes them with open arms. We have operated these vehicles since 1931 and have never received a complaint from the public about them. This speaks more eloquently about them than I can put into words. That, in brief, is why the public in Rhode Island is demanding more of them.

ALONZO R. WILLIAMS
First Vice-president and General Manager
United Electric Railways Co.
Providence, R. I.

Jail or a Sticker?

TRAFFIC VIOLATOR

LOS ANGELES' Traffic Department is using man's pride as a chief tool in its latest campaign against traffic violators. Judge H. Leonard Kaufman, presiding over the Los Angeles Traffic Court and heading the campaign, believes that his new method is an effective one.

Thousands of drivers each year receive citations for traffic violations, but Los Angeles' traffic records reveal that a small percentage of these same drivers are chronic violators. With the new system, if a violator's record includes a large number of traffic citations over a short period of time, he is subject to a fine and probation. The terms of the probation are five days in jail or having a large (7- by 4¼-inch) yellow and black sticker, "Traffic Violator," placed on the windshield of his car for thirty days. Those who decide in favor of the sticker are given appointments to take their cars to the Traffic Building of the Los Angeles Police Department, where a special detail from the Park and Intersection Control Division attach the sticker. The violator is informed on the expiration date of the 30-day period, at which time he returns his car to the Traffic Building to have the sticker removed.

Any attempt on the part of the violator to remove the sticker prior to this date automatically results in revocation of probation and the imposition of a jail sentence. So far, only one defendant has attempted the removal of his sticker, and he found himself spending 20 days in jail.

It is the belief of all concerned with the safety of the driving public that the new sticker system for chronic traffic violations will result in safer driving and a reduction of traffic deaths and injuries in Los Angeles.

S. A. SLAVENS, *Inspector*
Acting Director
Traffic Bureau, Department of Police
Los Angeles, Calif.

Importance of City Transportation

ONE of the most neglected segments of the transportation system is the transit service, on which millions of persons rely daily for commuting. In most cities there is a tremendous opportunity for improvement in the speed, comfort, and convenience of these public transportation facilities. With efficient modern equipment and satisfactory service, it should be possible with bus transportation, rapid transit, and other mass transportation facilities to solve economically much of the congestion and many of the parking problems that plague downtown areas.

From America's Needs and Resources, a Twentieth Century Fund Survey, 1947.

Detroit's Drunk Drivers Go to Jail

DETROIT'S posters, "Drunk Drivers Go To Jail," were not idle threats. During 1946, 679 drunk drivers spent 7,282 days in Detroit jails. At the same time, the Detroit Accident Prevention Bureau reports a 47.3% drop in total accidents resulting from "driving under the influence of intoxicating liquor." Fatal accidents showed a reduction of 50%, injury accidents 41%, and property damage accidents 51 percent.

Traffic-court figures further revealed that the drivers sent to jail in 1946 totaled approximately four times the 1945 number when 167 persons received straight jail sentences for periods amounting to 2,963 days. In 1946 a total of 955 drunk drivers were convicted. Those who weren't sentenced to jail for various reasons received heavy fines. Of the total, 511 were put on probation, as part of their sentence, for a total of 4,901 months. Generally, they were not allowed to drive and had to report periodically to the Probation Department. All convicted drunk drivers automatically lost their licenses for three months under the state law.

Traffic Court officials attributed the large number of convictions primarily to the use of Drunkometer, a device which automatically records the alcoholic content of the blood stream. Cases which in past years were brought to court on charges of reckless driving were recorded as drunk driving cases last year. The Accident Prevention Bureau report showed that there was a 96.2% conviction rate on warrants issued under the drunk motor law.

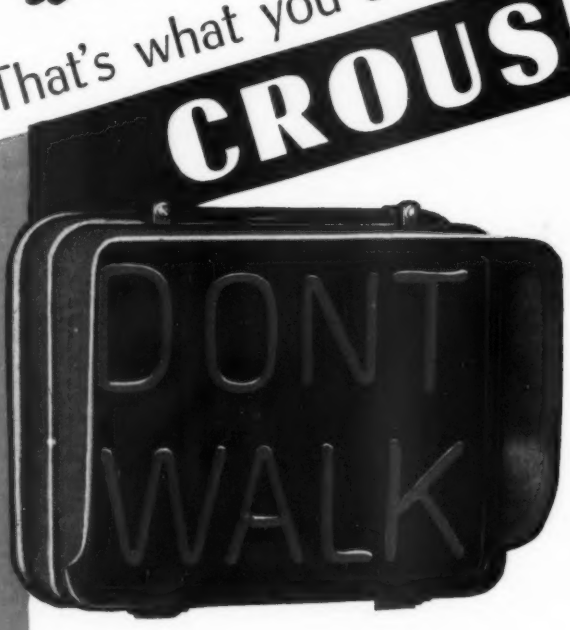
From the August issue of *Police Chief News*, Washington, D. C.

How much is a LIFE worth?

That's what you can SAVE by installing

CROUSE-HINDS NEON

Pedestrian Signals



At long last . . . . a signal that really curbs the **reckless pedestrian!**

He is one of the major causes of death and injury . . . . the reckless pedestrian who ignores the conventional traffic signal which he considers for vehicles only. His attention is arrested by the distinctive shape and brilliant lettering in Crouse-Hinds NEON Pedestrian Signals, the signals that deliver their message directly to HIM. He just naturally obeys their positive command.

Needed at all extra-busy corners, these signals are invaluable at complicated intersections, especially where it is hazardous for pedestrian and vehicular traffic to move at the same time in the same direction. Install them in the direct line of pedestrian vision at one of your "problem" intersections and note the outstanding improvement in pedestrian control.

These NEON signals are ideal for use as vehicle information signs, such as ROUTE 20⟶ , ONE WAY⟶ and NO LEFT TURN. Their striking appearance catches the eye of the motorist in locations where ordinary signs would be "lost" in distracting surroundings.

The weatherproof Crouse-Hinds NEON Pedestrian Signals and Traffic Signs are cast aluminum, built to withstand heavy duty. The letters are all red or a red and green combination, 4-1/2" high. Available in one-line and two-line types, these signals can be mounted like a conventional traffic signal, on top of a post, on bracket arms, on a span wire, or on a mast arm.

Write for full details. Ask for descriptive circular, Type TNO. It contains catalog listings of the 14 variations that are regularly furnished.

A Nationwide Distribution Through Electrical Wholesalers

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems ... from simple installations up to the most complex heavy traffic problem. Send for your copy.

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CONDULETS
FLOODLIGHTS
TRAFFIC SIGNALS
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ZONING and PLANNING NOTES

Edited by
NORMAN WILLIAMS, JR.
with the assistance of
FRANK B. WILLIAMS
and
EDWARD M. BASSETT

Lanham Act—Conformity With Local Zoning Regulations

NEW JERSEY. *Tim* v. *City of Long Branch*, 53 Atlantic (2d) 164 (New Jersey Court of Errors and Appeals, May 15, 1947).

During negotiations by the Federal Government to lease a large residence in Long Branch and convert it to apartments, in accordance with the provisions of the Lanham Act, the local zoning regulations were changed to limit the number of apartment units in a converted building to between three and six. Final plans for this converted building called for 14 apartments. The project was challenged as contrary to the requirements in the Lanham Act that, so far as practicable, such buildings should "conform in location and design to local planning and tradition." The Zoning Board of Adjustment reduced to nine the number of apartments permitted, and the Courts affirmed the approval of this smaller number.

The Court first recognized that Federal action under the Lanham Act, based upon the war power, supersedes any conflicting local legislation. The cited provision in the statute was held to show a desire to comply with local zoning ordinances, but to leave the Federal authorities with ultimate discretion to proceed as they saw fit, rather than to bind them inflexibly. It is not clear why, under this logic, the Board of Adjustment's reduction in the number of apartments should be upheld.

Airports—Regulations As Nuisances

FLORIDA. *Brooks* v. *Patterson*, 31 Southern (2d) 472 (Florida Supreme Court, July 8, 1947).

The airport in St. Petersburg was founded in 1928 and subsequently enlarged, especially in connection with its greatly increased use during the war. Under an agreement made in 1944 between the City and the Federal Government, the latter expended $500,000 more to improve and expand the airport, on condition that the City would continue to operate it as a public airport during the life of such improvements. The usual regulations were adopted to regulate operation of the airport, but apparently were violated fairly frequently. On May 14, 1945, neighboring landowners brought an action seeking (1) to enjoin flying over their property at a height under 500 feet, and (2) to enjoin operation of the airport as a nuisance.

As the Court pointed out, an airport, even though it may cause inconvenience and irritation, is an inevitable and necessary part of progress, and certainly not a nuisance per se. In fact the opinion contained several literary allusions to the march of progress. As long as an airport is operated in a usual and normal manner, no legal objection can be made; and the regulations adopted indicated a normal mode of operation. However, in view of the number of violations of these regulations, the Courts undertook to set up further requirements for its operation. A control tower should be built as soon as possible; the regulations should forbid flights so low as to endanger property or cause shock and fright; some one should be present 24 hours a day to supervise and enforce these regulations as to low flying, and future use of the airport should be forbidden to habitual violators.

Trailer Camps as Nuisances

GEORGIA. *Nichols* v. *Pirkle*, 43 South Eastern (2d) 306 (Georgia Supreme Court, June 12, 1947).

After a trailer camp was established on land adjacent to the plaintiffs, the latter sought to enjoin it, and alleged a number of objections—accumulation of garbage, bad odors, loud and unpleasant language, floodlights, and repeated confusion between the plaintiffs's driveway and that of the trailer camp. Moreover, a license required under Georgia law for operation of a trailer camp had not been obtained; and, apparently after this issue was raised, defendant attempted to turn over the camp to a new non-profit corporation, named "Southern Hospitality, Inc." The plaintiff sought to enjoin operation of the camp as a public nuisance, and because it was unlicensed; the defendant attacked the constitutionality of the licensing law.

Most of the opinion was devoted to arguing around in a curious circle on the issue of the plaintiff's standing to bring suit (which was finally upheld). In upholding the constitutionality of the Licensing Act, the Court pointed to the congestion, the uncertain sanitary conditions, and the transitory inhabitants, and held that these factors made such a camp "affected with a public interest" and so subject to regulation under the police power. A temporary injunction was therefore granted against operation of the trailer camp until it was properly licensed. It is not clear why it was felt necessary to bring in the phrase "affected with a public interest," usually invoked to justify price regulation but recently discarded even there, to justify regulation of a natural subject of regulation under the police power.

Regulation of Junk Yards

PENNSYLVANIA. *Commonwealth* v. *Baker*, 53 Atlantic (2d) 829 (Pennsylvania Superior Court, July 17, 1947).

In separate sections, an ordinance of the Town of Lewisburg forbade maintenance of a junk yard within that borough, with provisions for summary conviction and fines against violators, and also declared a junk yard to be a public nuisance and liable to be abated as provided by law. After a summary conviction for maintaining a junk yard, the defendant argued that proof should have been presented to show that the yard was either a nuisance per se or a nuisance in fact. However, the Court distinguished the two separate sections, and pointed out that proof of the existence of a junk yard was sufficient to support a summary conviction.

"Manufacture" and Laundries—Zoning

NEW JERSEY. *Lowenthal* v. *Bratt*, 53 Atlantic (2d) 306 (New Jersey Supreme Court, June 3, 1947).

Zoning regulations in a business area forbade manufacturing except for light manufacturing; and the definition of "manufacture" specifically mentioned "also laundries, cleaning and pressing establishments." In this case a really stubborn litigant argued, quite unsuccessfully, that nevertheless laundries were meant to be included under light manufacturing.

Animal Slaughtering—Quadrupeds, Not Poultry

OHIO. *State ex rel. Del Monte* v. *Woodmansee*, 72 Northeastern (2d) 789 (Ohio Court of Appeals, December 9, 1946).

Del Monte applied for a building permit in connection with a proposed retail dairy and poultry business within a retail business zone in Euclid, Ohio. While the application was pending, the relevant zoning regulations were changed to forbid "stock yards, slaughtering of animals" in that zone. The application was therefore denied, and the Board of Zoning Appeals delayed action on the hearing over a period of four months; so Del Monte brought an action of mandamus in court.

The Court first held that if a board of zoning appeals delays so long on a case where dispatch is obviously necessary, this may be construed as denial of petitioner's rights and thus permits him to take an appeal to the courts. Moreover, the "slaughtering of animals," especially in connection with reference to stockyards, was interpreted as referring only to quadrupeds, and as not including birds or fowl. A retail business for killing and dressing poultry was, therefore, permitted within this zone.

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LEGAL NOTES and DECISIONS

Prepared by
NATIONAL INSTITUTE
of
MUNICIPAL LAW OFFICERS

CHARLES S. RHYNE
General Counsel

Bicycles—One Way Street—Application to

In action for damages caused when minor plaintiff, on bicycle, was injured in collision with bus, held local authorities have power to provide for one-way traffic of bicycles as well as of other vehicles. *Thompson* v. *Philadelphia Transp. Co.*, 53 Atl. (2d) 120 (Pa., May 26, 1947).

Bonds—Sufficiency of Votes at Election to Authorize

Where total votes cast at special election for issuance of port bonds were fewer than 50% of total number of voters voting in port district at preceding general country or state election, held issuance of bonds was unauthorized. *Carey* v. *Port of Seattle*, 179 Pac. (2d) 501 (Wash., Apr. 17, 1947).

Building Code—Contributory Negligence—Continued Occupancy of Non-Conforming Building As

In action for death of tenant's child when tenement without stairways required by Building Code of City of Norfolk burned, held continued occupancy did not constitute contributory negligence on part of parents. *Gallagher* v. *Stathis*, 43 S. E. (2d) 33 (Va., June 9, 1947).

City Employes—Civil Service—Dismissal Without Following Statutory Procedure

In mandamus, where statutory procedure for dismissal of civil service employe was not followed, held dismissal was ineffectual and employe entitled to reinstatement. *Ahlstedt* v. *Board of Education of City of Los Angeles*, 180 Pac. (2d) 949 (Cal. App., May 23, 1947).

City Officers—Right of Mayor To Fill Vacancy In Council

In quo warranto proceeding, where three members of Youngstown city council left city to prevent existence of quorum and thus prevented filling of vacancy in council, held mayor had right and mandatory duty in absence of connivance on his part, to appoint councilman to fill vacancy, under statute authorizing such appointment if council "fail" to fill vacancy. *State ex rel. Flask* v. *Collins*, 73 N. E. (2d) 195 (Ohio, April 23, 1947).

Civil Liberties—Ordinance Forbidding Female Bartenders—Validity

In action for declaratory decree, held that municipal ordinance of City of Miami providing that no female shall be employed for purpose of serving, or be permitted to serve liquor by drink over bar or counter is unconstitutional as applied to woman employed as bartender. *Brown* v. *Foley*, 29 So. (2d) 870 (Fla., April 17, 1947).

Civil Liberties—Restrictive Convenants—Negroes

Where city residential subdivision restricted to persons of white race by corporation subdividing real estate, held that decree enjoining negro from using or occupying lot in subdivision was not contrary to public policy or violation of due process or equal protection provisions of state and federal constitutions. *Northwest Civic Ass'n* v. *Sheldon*, 27 N. W. (2d) 36 (Mich., April 17, 1947).

Firemen—Discharge—Conduct Unbecoming City Employes While Off Duty

In mandamus to compel reinstatement of firemen held that member of City of Miami Beach Fire Department who while intoxicated threw his pregnant wife to the ground and beat another woman was guilty of "conduct unbecoming a city employe" and subject to discharge therefor, though such conduct occurred while off duty. *Kennett* v. *Barber*, 31 So. (2d) 44 (Fla., June 10, 1947). *Reh. den.* July 7, 1947.

Gross Sales Tax—Authority Of City to Impose On Cigarettes

In action for injunction, held statute authorizing municipalities to impose tax on anything for which state license is required does not authorize city ordinance imposing gross sales tax on, and registration fee for selling, cigarettes; such tax being a "privilege tax," not "license tax." *Shulick-Taylor Co.* v. *City of Wheeling*, 43 S. E. (2d) 54 (W. Va., May 27, 1947).

Hospital—Operation as Governmental Function

In action for damages for unlawful performance of autopsy, held City of Denver, which operated hospital for preserving and maintaining health of city's inhabitants, was acting in "governmental capacity" and therefore not liable for alleged negligence of its employes in performing unauthorized autopsy on patient who died in hospital. *Schwalb* v. *Connelly*, 179 Pac. (2d) 667 (Colo., April 7, 1947).

Parades—Ordinance Prohibiting—Validity

On appeal from order dismissing complaint, held that ordinance of City of Los Angeles prohibiting holding procession or parade without permit from Board of Police Commissioners, which ordinance set up no standard by which board is required to measure its decision, is unconstitutional as violation of due process. *People* v. *Duffy*, 179 Pac. (2d) 876 (Cal. Super. Ct., Los Angeles Co., April 26, 1947).

Policemen—Right to Join Labor Unions

In action to restrain Board of Police Commissioners from enforcing resolution designed and intended to prevent police officers from being members of police officer labor union, held resolution that no police officer of Los Angeles Department should thereafter be or become member of any police officers organization identified with any trade association, federation, or labor union whose membership was not made up exclusively of employes of the city, was not unconstitutional. *Perez* v. *Board of Police Commissioners of the City of Los Angeles*, 178 Pac. (2d) 537 (Cal. App., March 20, 1947). *Reh. den.* April 7, 1947.

Officers—Increase Of Compensation During Term of Office

In action against sheriff of Franklin County for judgment declaring whether sheriff is entitled to collect commission of 4% or 1% for collection of school taxes, held constitutional provisions prohibiting change in compensation of officers after election or appointment or during their term refers to salaries of officers paid fixed salaries and fees and commissions of other officers. *Weber* v. *True*, 202 S. W. (2d) 174 (Ky. App., May 6, 1947).

Ordinances—Validity—Right of City to Appeal

Where defendant was acquitted on charge of violating city ordinance, and record showed no indication that validity of ordinance was attacked or that trial court adjudged defendant not guilty by reason of invalidity of ordinance, city was without right to appeal. *City of Florence* v. *England*, 30 So. (2d) 676 (Ala. App., May 27, 1947).

Policemen—Liability for Personal Negligence—Statute Exempting Constitutional

In action against City of Youngstown policeman for negligence in driving ambulance in response to emergency call during which accident occurred and plaintiff was injured, held that statute exempting policemen from personal liability for their negligent operation of motor vehicles was constitutional. *McDermott* v. *Irwin*, 73 N. E. (2d) 86 (Ohio, May 7, 1947).

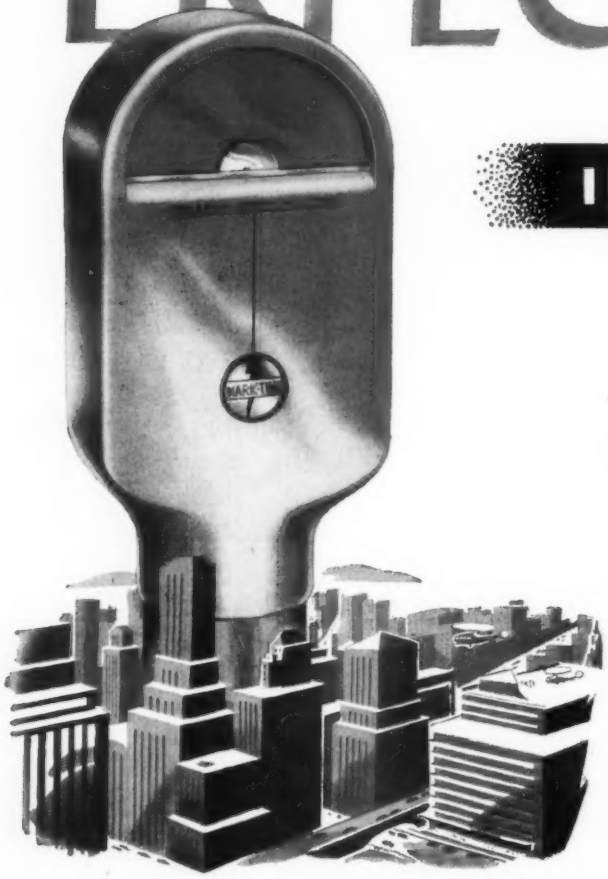
Public Housing—Fire Hazards—Municipal Liability

In action for wrongful death, held fact that dormitories in housing unit were built by Federal agency would not excuse city's housing authority, to which dormitories were leased, from attempting to remedy dangerous fire hazard in dormitories after city's housing authority was operating them. *Manney* v. *Housing Authority of City of Richmond*; *Williams* v. *Same*; *Shepard* v. *Same*, 180 Pac. (2d) 69 (Cal. App., May 2, 1947).

Workmen's Compensation—City Policemen—Heart Trouble as Unforeseen Accident

Where policeman had suffered initial heart trouble from carrying prisoner up several flights of steps and subsequently suffered additional attacks which resulted in death, held that such heart ailment was accident within the Workmen's Compensation Act, and widow was entitled to award. *Gabriel* v. *Town of Newton*, 42 S. E. (2d) 96 (N. C., April 9, 1947).

PERFECTION



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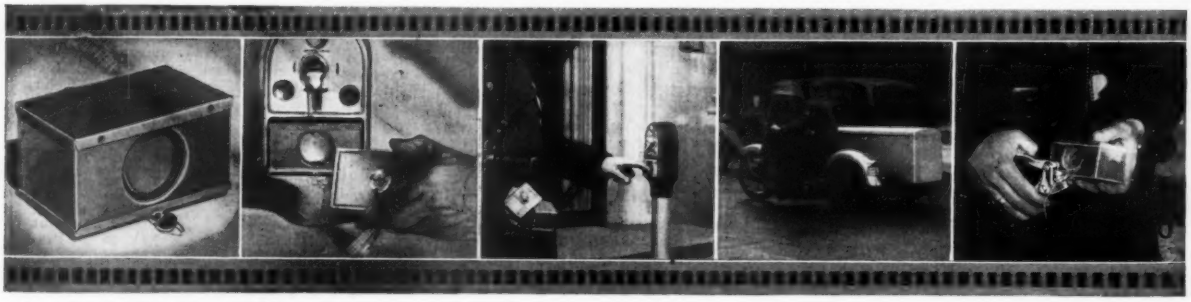

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Recent City Manager Appointments

CARTER W. BEAMER, city engineer of Fredericksburg, Va., became manager of Wytheville, Va., on September 1.

P. H. BEAUVAIS, manager of Manistee, Mich., 1918-21; Royal Oaks, 1921-25; Manistique, 1936-42; and Alms since 1943, became first manager of Allegan on September 2.

C. D. DECKER, city engineer of Bryan, Ohio, has been appointed first manager of Grafton, W. Va.

JOHN J. DESMOND, city clerk, Peabody, Mass., has been appointed city manager of Mansfield, Mass.

A. E. FULLER, former manager of Miami, Fla., from December 1937 to August 1939, and more recently Vice-president of the Pan American Bank, Miami, became first county manager of Fulton County, Ga., on October 10.

M. E. HENDERSON, who has been on leave to the army since November 1940, returned to his post as city manager of Bozeman, Mont., August 15. Fred Quinnell has been acting manager in the interim.

OSCAR HETTEMA is serving as manager of Dade City, Fla.

ANTON C. MICHELSON has been appointed manager of Hollywood, Fla.

ROSS MILLER, city manager of Santa Rosa, Calif., since June 1946, became manager of Berkeley, Calif., on October 1.

J. M. MURPHY, former district engineer for the State Highway Department, has been appointed manager of Las Vegas, Nev., following the resignation of T. E. Fennessy.

C. D. PICKERRELL is serving as city manager of Whiteville, N. C.

B. A. ROBBINS has been appointed town manager of Cavendish, Vt.

MRS. IDA SAMUELSON, city clerk, is acting as manager of Safety Harbor, Fla., following the resignation of A. V. Hancock.

GEORGE SHAW has succeeded E. A. Rolison as city manager of Avalon, Calif.

M. W. SLANKARD, street superintendent of San Leandro, Calif., has been appointed first manager of Roseburg, Ore.

Z. H. TESSENDORF, city engineer, is serving as acting manager of Anchorage, Alaska, following the resignation of A. J. Koenig.

COL. JAMES R. TOWNSEND has been appointed city manager of Greensboro, N. C.

R. L. VAN NOCKER, city manager of Albert Lea, Minn., from 1933 to 1941, and more recently a post engineer with the Army, has been appointed first manager of South Norfolk, Va.

DONALD C. WAGNER, city manager of West Reading, Pa., 1927-38; Ephrata, Pa., 1938-42, and Long Beach, N. Y., since January 1946, will become manager of Portsmouth, Ohio, on November 1.

J. A. WILLMAN, city-county public health engineer since 1940, has been appointed city manager of Columbus, Ga.

W. A. WOODWARD, former town manager of Ashland, became city manager of Radford, Va., on September 1.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association
Chicago, Ill.

Municipal Bond Offering Volume Zooms Upward

New history has been made during recent months in the municipal bond financing field, according to September issues of *The Bond Buyer*, authoritative magazine on municipal bonds. New state and municipal financing during August totaled $189,585,733, as compared with $67,525,766 in August 1946. During the first eight months of this year, new financing by states and municipalities amounted to $1,747,218,569, as compared with $807,235,995 in the corresponding period of 1946.

The Bond Buyer points out that the post-war era of increased municipal borrowing may be said to have started late in 1946 and really hit its stride last spring. Notwithstanding the substantial expansion in the volume of state and municipal bonds sold thus far in 1947, the magazine declares, the grand total of prospective issues continues to increase. The new figure is $6,223,652,000, with proposed municipal bond issues amounting to $3,373,622,278, and proposed state and state agency bond issues totaling $2,850,030,500.

The Bond Buyer comments on the success in the sale of recent large issues to the bond-hungry public and states, "new financing for the last quarter of the year promises to continue in greater volume than in the same quarter of any recent or even pre-war year."

Pittsburgh Bond Issue Wins Decisive Approval

A FIVE-YEAR $21,000,000 improvement program for Pittsburgh was given the go-ahead signal last month when the voters of that city overwhelmingly approved a bond issue to finance the plan by a two-to-one majority. The improvement program was designed to catch up on the city's repair and construction work, foregone during the war.

New bonds are to be issued only as current city indebtedness is retired, which means that the total debt of the city will not be increased by the program.

The bond issue, second biggest in the city's history, was exceeded only by a $21,366,000 issue in 1919. The breakdown of proposed expenditures follows:

$3,800,000—for playgrounds, parks, and recreation equipment.

$14,800,000—for new projects including Negley Run Parkway, property damage on the Crosstown Boulevard and extension of the Ohio River Boulevard; improvement and repair of streets and major bridge, water line, and sewer repairs.

$2,200,000—for repair, reconstruction, and re-equipment of city buildings, including improvements to fire, police, and traffic systems.

$200,000—for new libraries in the Knoxville and Beechview areas, and new power and light equipment for the Carnegie Library in Oakland.

The Municipal Bond Market

Some sales of new issues reported in September numbers of *The Bond Buyer*

Amount	*Borrower and Purpose*	*Rate (%)*	*Term Years*	*Basis (%)*
$ 55,000	St. Paul, Minn., Public Welfare	.90	2 Avg.	.895
25,000	Charles City Airport Commission, Ia., Airport	1	3.75 Avg.	.95
80,000	Lynn, Mass., Water Mains and Equipment	1	1-5 Ser.	.93
100,000	*Frederick, Md., Airport	1.10	6.75 Avg.	1.08
425,000	Darien, Conn., School	1.20	9.75 Avg.	1.19
11,000	Elwood, Ind., City Building and Equipment	1.25	6.83 Avg.	1.219
410,000	Moorhead, Minn., Water and Light Plant Revenue	1.50	6.50 Avg.	1.903
13,705	Lima, O., Sewer Imp. Spec. Assessment	1.75	6.83 Avg.	1.512
35,000	Leeds, N. D., School District	1.90	9.66 Avg.	1.896
55,000	Bristol, Tenn., Street Equipment	2	10.66 Avg.	1.97
120,000	Albany, Ga., School Building	2.25	15.50 Avg.	2.044
3,451	Saybrook Township, O., Road Improvement	2.50	4.25 Avg.	2.427
50,000	Arlington, O., Electric Light and Power Plant Mortgage Revenue	3.25	10.50/17.83 O.-A.	3.096

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Alfco Twin Automatic Meters are the greatest innovation in metered parking control because one Twin Meter does the work of two ordinary meters at about half the cost of initial purchase, at one half the cost of installation, maintenance, servicing, and collections, yet serve just as many parking spaces with greater convenience to citizens, and enhance the good looks of city streets, and parking areas.

Alfco Twin Automatic Meters are the most economical to purchase and install because in addition to all these other advantages, they pay for themselves in about one half the time required to pay for the ordinary meter which parks one car only.

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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

OCTOBER

AMERICAN SOCIETY OF CIVIL ENGINEERS. Fall Meeting. JACKSONVILLE, FLA., Oct. 15-17 (Roosevelt Hotel). Exec. Sec., William N. Carey, 33 W. 39th St., New York 18, N. Y.

AMERICAN WATER WORKS ASSOCIATION—WISCONSIN SECTION. Annual Meeting. MILWAUKEE, WIS., OCT. 23-25 (Hotel Schroeder). Sec., L. A. Smith, Supt., Water Works, Madison, Wis.

*LEAGUE OF IOWA MUNICIPALITIES. Annual Meeting. DES MOINES, IOWA, OCT. 15-16. Sec.-Treas., Max A. Conrad, Tama Bldg., Burlington, Iowa.

*LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Meeting. GRAND ISLAND, NEBR., OCT. 1517. Sec.-Treas., C. E. Beals, 310 Continental Bk. Bldg.., Lincoln, Nebr.

*LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Meeting. GREEN BAY, WIS., OCT. 23-24. Sec., Frederick MacMillin. 30 East Johnson St., Madison, Wis.

MISSOURI WATER AND SEWAGE CONFERENCE. Annual Meeting. JEFFERSON CITY, MO., OCT. 27-28 (Governor Hotel). Sec.-Treas., Warren A. Kramer, State Office Bldg., Jefferson City, Mo.

MUNICIPAL AUTHORITIES OF PENNSYLVANIA. Annual Conference. HARRISBURG, PA., OCT. 16-17. (Hotel Harrisburger). Sec. Treas., Claude C. Fogelman, Pennsylvania Municipal Authorities Association, 1717 Main St., Northampton, Pa.

VIRGINIA INDUSTRIAL WASTES AND SEWAGE WORKS ASSOCIATION. Annual Meeting. OCEAN CITY, VA., OCT. 16-17. (Nansemond Hotel). Sec., A. H. Passler, 815 East Franklin St., Richmond 19, Va.

NOVEMBER

AMERICAN MUNICIPAL ASSOCIATION. Annual Meeting. NEW ORLEANS, LA., NOV. 2-6. Exec. Dir., Earl D. Mallery, 1313 E. 60th St., Chicago 37, Ill.

AMERICAN WATER WORKS ASSOCIATION—FLORIDA AND CUBAN SECTIONS. Annual Meeting. ST. PETERSBURG, FLA., NOV. 20-22. Sec. Florida Section, A. P. Black, Prof. of Chemistry, Univ. of Florida, Gainesville, Fla.—Sec. Cuban Section, Lauren H. Daniel, Box 531, Havana, Cuba.

AMERICAN WATER WORKS ASSOCIATION—FOUR STATES SECTION. Annual Meeting. WASHINGTON, D. C., Nov. 19-21 Sec. Treas., W. A. Welch, 748 Public Ledger Bldg., Philadelphia, Pa.

AMERICAN WATER WORKS ASSOCIATION—NEW JERSEY SECTION. Annual Meeting. ATLANTIC CITY, N. J., NOV. 6-8 (Claridge Hotel). Sec. C. B. Tygert, Box 178, Newark, N. J.

AMERICAN WATER WORKS ASSOCIATION—NORTH CAROLINA SECTION. Annual Meeting. GREENSBORO, N. C., Nov. 10-12 (Sedgfield Inn). Sec., G. S. Moore, Supt., Water & Light Dept., Albemarle, N. C.

AMERICAN WATER WORKS ASSOCIATION—SOUTH EASTERN SECTION. Annual Meeting. ATLANTA, GA., NOV. 3-5. Sec., B. P. Rice, Reconstruction Finance Corp., Bond Service Division. Healey Bldg., Atlanta, Ga.

AMERICAN WATER WORKS ASSOCIATION—VIRGINIA SECTION. Annual Meeting. ROANOKE, VA., NOV. 17-18. (Hotel Roanoke). Sec. W. H. Shrewbridge, Asst. Engr., State Health Dept., 708 State Office Bldg., Richmond Va.

CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. Annual Meeting. DALLAS, TEXAS. Nov. 17-20. (Baker Hotel). Dir., James M. Mitchell, 1313 E. 60th St., Chicago 37, Ill.

ENGINEERS SOCIETY OF WESTERN PENNSYLVANIA. Annual Meeting. PITTSBURGH, PA., NOV. 12-14. (William Penn Hotel). Chairman, H. M. Olson, 171 Longue Vue Drive, Pittsburgh, Pa.

NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Meeting. NEW YORK, N. Y., NOV. 17-20 (Hotel New Yorker). Exec. Dir., Robert D. Sipprell, 1313 E. 60th St., Chicago 37, Ill.

NATIONAL MUNICIPAL LEAGUE. Annual Convention. NASHVILLE, TENN., NOV. 12-14 (Hermitage Hotel). Exec. Sec., Alfred Willoughby, 299 Broadway, New York 7, N. Y.

NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Conference. ATLANTIC CITY, N. J. Nov. 12-14. Exec. Sec., James J. Smith, 808 Trenton Trust Bldg., Trenton, N. J.

NORTH CAROLINA SEWAGE WORKS ASSOCIATION. Annual Meeting. GREENSBORO, N. C., Nov. 10-12 (Sedgfield Inn). Sec. Treas., George S. Moore, P. O. Box 125, Albemarle, N. C.

SOUTHERN BUILDING CODE CONGRESS. Annual Convention. ORLANDO, FLA., NOV. 10-14. Dir., M. L. Clement, 750 Brown-Marx Bldg., Birmingham 3, Ala.

DECEMBER

AMERICAN PUBLIC WELFARE ASSOCIATION. Annual Meeting. CLEVELAND, OHIO, DEC. 3-7. (Statler Hotel). Dir., Howard L. Russell, 1313 E. 60th St., Chicago 37, Ill.

*AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual Meeting. ATLANTIC CITY, N. J., DEC. 1-5 (Chalfonte-Haddon Hall Hotel). Exec. Asst. Sec., Ernest Hartford, 29 West 39th St., New York 18, N. Y.

HIGHWAY RESEARCH BOARD. Annual Meeting. WASHINGTON, D. C., DEC. 1-6. (National Academy of Sciences). Dir., Roy W. Crum, 2101 Constitution Ave., NW., Washington 25, D. C.

FEBRUARY

*ASSOCIATED EQUIPMENT DISTRIBUTORS. Annual Meeting. CHICAGO, ILL., FEB. 15-19, 1948 (Edgewater Beach Hotel). Exec. Sec., Frank G. Knight, 360 N. Michigan Ave., Chicago, Ill.

MARCH

*ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting. ATLANTIC CITY, N. J., MARCH 3, 1948 (Traymore Hotel). Sec.-Treas., A. Lee Grover, Secretary, State Highway Dept., Trenton, N. J.

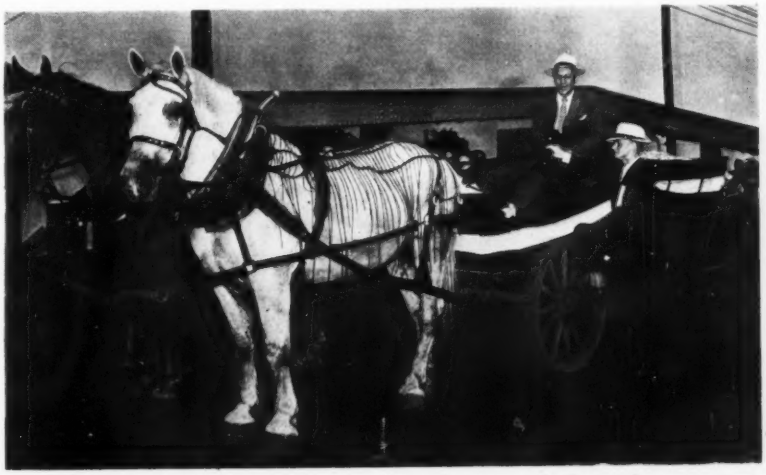
*AMERICAN CONCRETE PIPE ASSOCIATION. Annual Meeting. NEW ORLEANS, LA., MARCH 11-13, 1948 (The Roosevelt). Mng. Dir., Howard F. Peckworth. 228 N. La Salle St., Chicago, Ill.

Returned Gravel Highlights North Tonawanda Jubilee

THE payment of a 50-year-old debt —a wagon-load of gravel—was the key event in the recent golden jubilee celebration of North Tonawanda, N. Y. According to the dim past of local history and the stories of old-timers, the theft of the gravel by residents of southside Tonawanda was the incident that set off the rebellion and secession by North Tonawanda in 1897.

But that there now exists a spirit of cooperation and good fellowship between the neighboring two cities was demonstrated at the North Tonawanda jubilee program. On the evening of the celebration, Mayor Clarence A. Hackett of Tonawanda set out from the city hall driving a wagon-load of gravel to make good his city's alleged debt. At the boundary of North Tonawanda he was joined by that city's mayor, Myles W. Joyce. To the accompaniment of a band and cheers from the throng lining the curbs, they rode to the stadium together.

As the "thieves" returned the gravel there, and the "rebels" accepted it, in exchange for a 3- by 5-foot cardboard receipt, a gala procession was held and the gravel was dumped in the middle of the stadium grounds, where all could see it, as a monument to the present brotherly spirit of the "Tonawandas."



Mayor Clarence A. Hackett of Tonawanda is shown on the horse-drawn wagon, turning over the reins to Mayor Myles W. Joyce of North Tonawanda.

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DUAL meters, long-time favorites, are growing constantly more popular—because of their *precision* in design, construction, and operation.

The Dual mechanism is a completely packaged unit, engineered to operate practically maintenance-free. The meter setting works automatically—no levers to cause servicing problems. Duals are *tamper-proof*—and *weather-proof.* Only the highest quality materials and workmanship are used in their construction. *And the meter movement, the most vital part of any meter, is manufactured by the makers of the famous Seth Thomas clocks.*

Long after Duals have paid for themselves, they provide a steady source of income that can be used to help pay for off-street parking facilities and help solve other traffic control problems. Get complete information about Dual's many advantages. Write for free, illustrated Bulletin DU-501, or ask for helpful engineering service.

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Municipal and Civic Publications

Sewage Works Guides

LECTURES FOR SEWAGE WORKS OPERATORS AND LABORATORY GUIDE FOR SEWAGE WORKS OPERATORS—*Pennsylvania Sewage Works Assn., Kirby Health Center, Wilkes-Barre, Pa., Bernard Bush, Secretary-Treasurer. Two volumes. 109 pp. of lectures. 92 pp. laboratory guide.* $3.00.

These two volumes are handy and practical guides for the sewage plant operator and the sanitary engineer. The lectures are compiled from a short course on sewage treatment conducted at St. Joseph's College in Philadelphia, in 1945. They cover broadly the entire field, from a discussion of the reasons for sewage treatment to an explanation of sewage plant records and operating reports. They go into specific phases of plant operation, such as operation of mechanical screens, grit chambers, clarifiers; operation of Imhoff tanks, various types of filters, activated sludge treatment and sludge digestion and sewage chlorination. The lecturers are all specialists and well qualified.

The Laboratory Guide, written by D. Paul Rogers, Principal Chemist, Bureau of Engineering, Pennsylvania Department of Health, gives briefly the procedure for the principal tests used in sewage treatment analysis and also lists the chemicals and laboratory apparatus required.

Surface-Water

CHEMICAL CHARACTER OF SURFACE-WATER SUPPLIES IN NORTH CAROLINA: *Descriptions and Chemical Character—By William L. Lamar and Felix H. Pauszek. U. S. Geological Survey, Raleigh, N. C. 1947. Prepared in cooperation with the North Carolina State Board of Health. 41 pp. Free.*

Information on 116 public surface-water supplies serving 139 communities in North Carolina is contained in this report. This, coupled with the 118 complete chemical analyses of the finished waters as delivered to consumers, should make the report interesting to most sanitary engineers.

CHEMICAL CHARACTER OF SURFACE WATERS OF VIRGINIA, 1945-46—*By William L. Lamar and George W. Whetstone. Va. Cons. Comm. Div. of Water Resources and Power Bull. No. 8, 1947. Prepared in cooperation with the U. S. Geological Survey, Charlottesville, Va. 46 pp. Free.*

This report, giving 497 complete analyses showing the chemical character of surface waters in Virginia, should be most helpful to municipalities and industries in Virginia in the selection of the best sources of water supply and in the determination of the degree and type of treatment required.

Coal Mining Towns

A MEDICAL SURVEY OF THE BITUMINOUS-COAL INDUSTRY—*Report of the Coal Mines Administration, Department of the Interior. For sale by the Superintendent of Documents, United States Government Printing Office, Washington 25, D. C. 1947. 311 pp. $1.75.*

This excellent and penetrating report represents the first nation-wide medical survey of an industry conducted under government auspices. Chapters on housing and sanitary facilities, off-the-job living, and an illustrated supplement, "The Coal Miner and his Family," indicate the broad scope of the survey. Public health, industrial medicine, general medical services, hospitalization, and hospital facilities are also discussed at length.

The many striking photographs illustrate forcefully the great contrasts in the living conditions of the miners in various communities and areas, and the community conditions so poor that their tolerance represents, in the words of the report, "a disgrace to a nation to which the world looks for pattern and guidance."

City Government Text

CITY GOVERNMENT IN THE UNITED STATES—*By Charles M. Kneier. Revised Edition. Harper and Brothers, College Department, 49 East 33rd St., New York 16, N. Y. 1947. 727 pp. $4.50.*

In this new edition of a realistic textbook for college and university usage, the attempt is made to include all of the important developments in the field of city government during the recent war and in the early post-war period. Seven new chapters have been added: Services Rendered by Municipal Governments, Village Government, Governmental Problems in Metropolitan Areas, Personnel Administration, Municipal Expenditures, Municipal Revenues, and Municipal Indebtedness.

The book is written in a highly readable style, and although the chapters are short, they represent a great deal of compressed research and diversified opinion. Generally, the book emphasizes the administrative and political aspects of municipal government, and delineates some of the larger problems of intergovernmental relationships. One could wish, however, that more attention had been given to the planning process in cities, and that some attempt had been made to describe in further detail the status of urban redevelopment and physical improvement programs.

A Chicago Investment Opportunity

AN OPPORTUNITY FOR PRIVATE AND PUBLIC INVESTMENT IN REBUILDING CHICAGO—*Prepared and published by 6 private and public organizations concerned with the rebuilding of a slum area. The Metropolitan Housing Council, 69 W. Washington St., Chicago 2, Ill. 1947. Illus. 61 pp. $2.00.*

This attractive report is specifically designed to point out to investors and to the general public the possibilities of large-scale urban redevelopment in a three-square-mile portion of the Central South Side of Chicago. It is also directed to other organizations, both public and private, concerned with the economic, social, and physical aspects of urban planning and redevelopment. Cooperating organizations in the study were the Illinois Institute of Technology, the Michael Reese Hospital, the South Side Planning Board, the Metropolitan Housing Council, Pace Associates, and the Chicago Housing Authority.

The imaginative drawings and sketches of proposed projects and apartments are of great help in visualizing the opportunity presented to public officials and private investors to work together on a soundly conceived program that would create a new urban environment. Unique in that it is the joint product of six separate public and private community organizations, the report and the plan should serve as an example of the cooperative teamwork required to overcome the obstacles to the rebuilding of slum areas.

A Highway Proposal

PROPOSED RECONSTRUCTION, U. S. 1, NEW HAVEN HARBOR FRONT—*Connecticut State Highway Department. 1947. 32 pp.*

Through the use of traffic flow charts, the report shows that the logical site for the relocation of U. S. 1 is along the west side of the New Haven Harbor. The new route would be located over a harbor front fill which is to be developed by scheduled New Haven Harbor dredging operations. Although a parkway development to the north will ease New Haven's congestion problem by permitting "through" traffic to by-pass the city, the U. S. 1 reconstruction is still considered necessary in order to provide adequate traffic routes to the city's center.

National Municipal League

THEY COME BY NIGHT—*National Municipal League, 299 Broadway, New York 7, N. Y. 1947. 21 pp. Copies free upon request.*

Cleverly written and amusingly illustrated, this well-designed pamphlet depicts in colorful fashion the work and services of the National Municipal League. "They Come By Night" signifies those visitors to the League's office interested in good government who prefer anonymity in the fear of retaliation from local ruling mashines.

Throughout its history, the League has been active in innumerable municipal reform campaigns. It has pioneered in the promotion of the short ballot and the council manager plan. Its Model Laws and its emphasis on continued citizen interest in local government have been two concepts of great influence in helping to raise local administrative standards throughout the country. It must be with a great deal of satisfaction that the League staff now surveys the 771 municipalities and counties with council-manager government; as of July 1947, one out of four U. S. cities of more than 10,000 had the manager plan.

County Airport Plan

MASTER PLAN OF AIRPORTS, HUMBOLDT COUNTY, CALIFORNIA—*Hahn, Campbell and Associates, Planning Consultants. Humboldt County Planning Commission, Calif. 1947. 73 pp.*

This master plan of airports, prepared by a consulting firm for the Humboldt County Planning Commission in northern California, is designed as a part of the master transportation plan, to be adopted as a part of the county master plan program. The plan is prepared in accordance with the form suggested by the California State Reconstruction and Reemployment Commission. Its scope encompasses the county's aeronautical requirements through the year 1955, with consideration given to requirements beyond that time.

Housing Cooperation

COOPERATION IN THE FIELD OF HOUSING CAN BREAK THE LOG JAM—*Herman T. Stichman, Commissioner of Housing, State of New York. Address given at annual meeting of New York State Conference of Mayors and Other Municipal Officials. Copies available upon request to N. Y. State Division of Housing, 270 Broadway, New York, N. Y. 1917. 8 pp.*

This talk by Mr. Stichman proposes that the field of cooperation in homebuilding be enlarged in each municipality of the state where there is an inadequate homebuilding program. Mr Stichman also describes briefly the work of the State Division of Housing. He urges municipal officials to join forces to defeat short-sighted realtors opposing any public program.

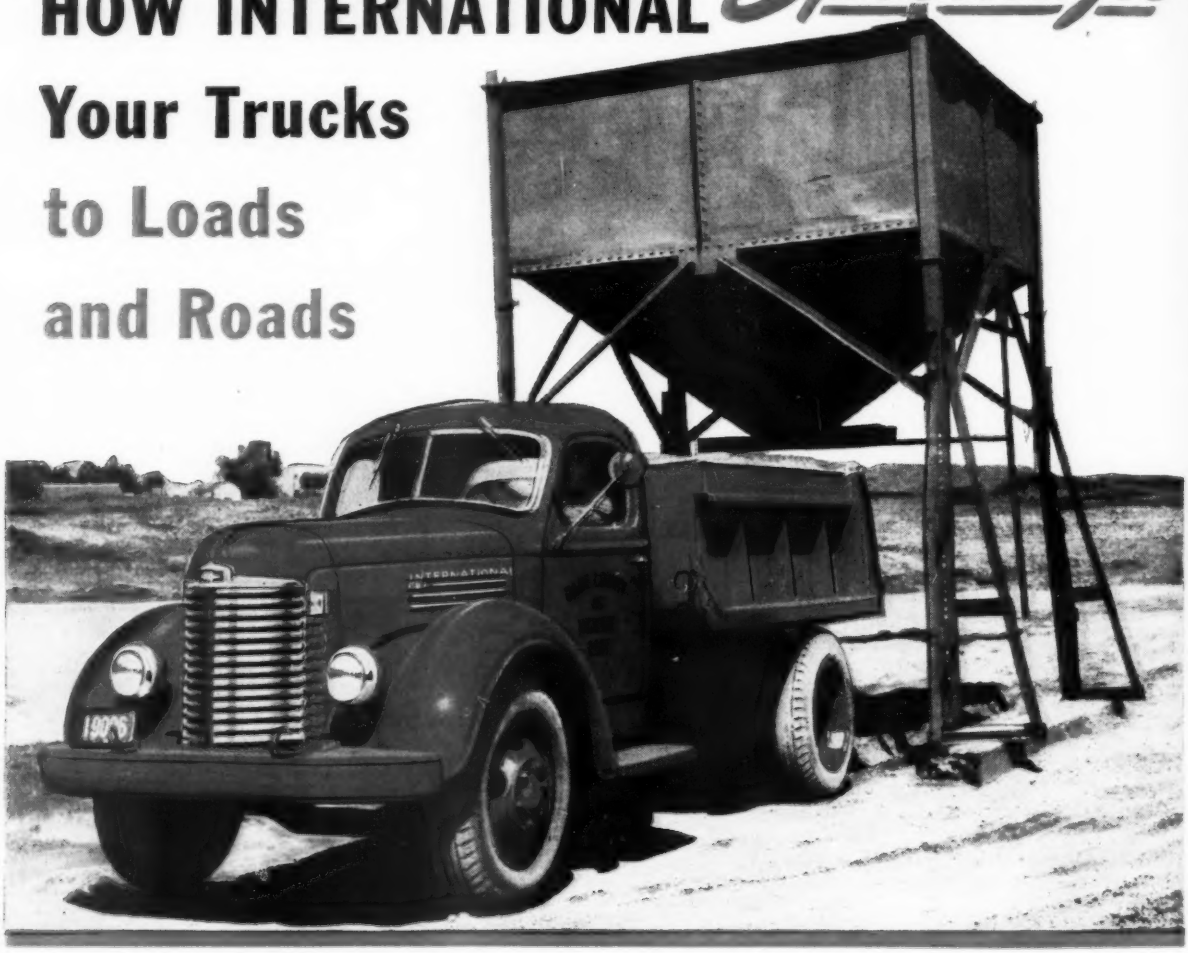
The Fluid City

THE DISINTEGRATION OF AMERICAN CITIES—*Tax Policy Bulletin, June-July, 1947. Tax Institute, Inc., 150 Nassau St., New York 7, N. Y. Single copies, 25 cents. Special prices on quantity orders.*

A thought-provoking discussion of decentralization trends, and steps necessary for adjustment to a "fluid city" concept. Dr. Mabel L. Walker, author of the paper, points out that such decentralization will have many advantages to the individual, although it will temporarily dislocate urban economies. She suggests that one of the first things cities must do is to find some way of taxing the fluid population. For another related discussion by Dr. Walker, see "Transportation and Taxes in the Fluid City of the Future," THE AMERICAN CITY for July 1947, Page 119.

HOW INTERNATIONAL *Specializes*

Your Trucks to Loads and Roads



This first step is an analysis of your hauling problem by your International Dealer or Branch.

This analysis includes type of load; method of loading; terrain and grades; and length of hauls.

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The International Truck Line is the most complete line built. It includes 22 basic models that *specialize* into more than 1,000 different types of trucks. Gross weight ratings are from 4,400 to 90,000 pounds.

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INTERNATIONAL

Tune in James Melton on "Harvest of Stars" Sunday! NBC Network.

INTERNATIONAL *Trucks*

Race Bias in Housing

RACE BIAS IN HOUSING—*By Charles Abrams. Sponsored jointly by National Association for the Advancement of Colored People, American Council on Race Relations, and American Civil Liberties Union. Copies obtainable from American Civil Liberties Union,* 170 *Fifth Ave., New York* 10, *N. Y.* 1947. 21 *pp.* 15 *cents.*

Housing is the key to unlocking many other doors barring Negroes from full and equal participation in community life—education, recreation, and places of public amusement—declares the foreword of this pamphlet outlining public policy in the housing field.

Tracing the growth of the segregation pattern and the means, such as restrictive covenants, used to maintain it, Charles Abrams, the author, points out the dangers of discrimination in publicly aided housing. He states, "If federal funds and powers are used to support segregation or discrimination in the government's own projects, and the practice receives public approval or even acquiescence, hope for ever restoring the lost equality between races may be shattered irretrievably." The author also sees grave dangers in urban redevelopment projects practicing discrimination.

The program of action set forth in the pamphlet requires:

1. Federal legislation to bar discrimination in federally aided housing.

2. State laws outlawing the racial housing covenant.

3. Court cases testing discrimination in publicly aided housing projects.

4. Court cases aimed at the racial housing covenant.

It also requires, the pamphlet declares, public education and the cooperation of all inter-racial agencies in bringing pressure to bear on housing authorities and real estate interests to abolish racial discriminations.

Ground-Water Supplies

GROUND WATER, ITS DEVELOPMENT, USES, AND CONSERVATION—*By E. W. Bennison. Published by Edward E. Johnson, Inc., St. Paul* 4, *Minn.* 1947. 509 *pp.* $2.25.

A text that is the outgrowth of a series of articles on the same subject that has appeared for the past several years in the *Johnson National Drillers' Journal.* The book is written in a direct, practical style and is primarily for the well-drilling industry and the users of ground water. Because the publisher of the book is a manufacturer of well screens and accessories, the text of course draws heavily on the experience and work of this organization. Nevertheless, the book is well prepared and rightfully can be classed as a useful text. Its 18 chapters take one through the entire field of groundwater supplies, from an analysis of the origin of ground water through the hydraulics of pumping to the use and its conservation.

Assessment Problems

ASSESSMENT ADMINISTRATION, 1946—PAPERS PRESENTED AT THE TWELFTH NATIONAL CONFERENCE ON ASSESSMENT ADMINISTRATION—*National Association of Assessing Officers,* 1313 *E. 60th St., Chicago* 37, *Ill.* 1947. 157 *pp.* $1.50.

Expert assessors from all sections of the country presented brief papers at the conference on current developments and problems in the assessment field. The volume represents a useful compilation of up-to-date opinions and ideas on the subject.

Snow Removal Ordinances

SNOW REMOVAL ORDINANCES IN VIRGINIA CITIES AND TOWNS—*League of Virginia Municipalities,* 902 *Travelers Building, Richmond* 19, *Va. Report No.* 302. 1947. *Mimeo.* 11 *pp.* 50 *cents.*

Ordinances of representative Virginia cities and towns pertaining to snow removal are quoted in the report as a guide to the action of other municipalities in meeting the snow removal problem.

Standards Price List

PRICE LIST OF AMERICAN STANDARDS—*American Standards Association,* 70 *East 45th St., New York* 17, *N. Y. August* 1947. 24 *pp. Free.*

A list of the 874 standards approved to date by the American Standards Association is contained in this catalogue. The standards are used throughout industry and by municipal, state, and federal governments. Manufacturers use them to facilitate production operations or lower production costs, to eliminate controversies between buyer and seller, and to raise the level of their industry by eliminating misrepresentation. Consumer groups use them as a yardstick to measure the merit of the things they buy. Government agencies use them in their capacity as buyers or as protectors of the public interest.

Public Utilities Text

ECONOMICS OF PUBLIC UTILITIES—*Emery Troxel, Wayne University. Rinehart and Co., Inc., College Department,* 232 *Madison Ave., New York* 16, *N. Y.* 1947. 892 *pp.* $5.75.

Designed primarily as a text for college courses in public utility economics, the emphasis of the book is on the social control and conflict between private enterprise and the public welfare which is resolved either by public regulation or by substitution of public for private ownership and management.

The chapters on municipal utility systems and the pricing of municipal services provide a general setting for events in this field. Considerable attention is given to the production of electric power and multiple-purpose projects on a federal level. The author points out that, since he lacks the unyielding convictions of a true partisan, he fails, in the book, to make an easy, absolute choice between public and private enterprise.

Plan for Sewickley

SEWICKLEY DISTRICT PLAN—*Prepared by Churchill-Fulmer Associates, City Planning Consultants, New York, N. Y. The Sewickley District Planning Association, Sewickley, Pa.* 1947. 72 *pp.*

The report, prepared for an area comprising the Pennsylvania boroughs of Sewickley, Edgeworth, Osborne, and Sewickley Heights, urges complete cooperation among the four boroughs, which are, in effect, according to the report, an entity geographically, economically, and, to an increasing degree, socially, although separated by political boundaries.

As major immediate recommendations, the report calls for the establishment of a regional planning commission, as provided under Pennsylvania law, the revision and strengthening of zoning ordinances and subdivision controls, and the provision of selected off-street parking sites.

Hospital Care

HOSPITAL CARE IN THE UNITED STATES—*Commission on Hospital Care. The Commonwealth Fund,* 41 *E. 57th St., New York* 22, *N. Y.* 1947. 631 *pp.* $4.50.

This report should prove useful in planning the expansion of hospital facilities throughout the country. It has been prepared by an independent, non-governmental committee, composed of outstanding leaders from many fields, both public and professional. The findings of an intensive two-year survey of general hospitals in the United States, conducted by the Commission on Hospital Care, are summarized in the volume.

The historical background of the expansion of hospital service is outlined and every hospital function is considered in its various ramifications. The factors governing the distribution, size, use, and need for hospital facilities are analyzed and attention is given to such major hospital problems as training of professional personnel, size of hospital community, utilization of hospitals, and method for estimating bed needs. Charts, graphs, maps, and work formulas give detailed data on the physical facilities, service statistics, and financial aspects of existing hospitals.

Efficient City Streets

MAKING BETTER USE OF TODAY'S STREETS—*Transportation and Communication Department, Chamber of Commerce of the United States, Washington* 6, *D. C.* 1947. *Illus.* 44 *pp. Single copies* 35 *cents. Quantity prices on request.*

This timely publication is packed with helpful hints for traffic congestion remedies that can be applied with little or no delay and at a minimum cost. Attention has been given to the needs and interests of all forms of traffic movement—by automobile, bus, truck, transit vehicle, or on foot.

The numerous traffic examples and solutions described have been used effectively in various small and large cities and were supplied by chambers of commerce and city and state traffic engineers, supplemented by many field investigations. A check list of 33 questions at the back of the publication provides a helpful method of determining traffic needs for an individual city.

Waste Treatment

WASTE TREATMENT GUIDE—*By the Interstate Commission on the Potomac River Basin,* 520 *Transportation Bldg., Washington* 6, *D. C.* 39 *pp.*

The pamphlet outlines the problems facing municipalities and industries relative to the control and abatement of pollution in streams. It consists of a summary of principal wastes that are or may be discharged into the Potomac River and its tributaries, together with a list of possible methods of treating them.

Municipal Funds

MUNICIPAL FUNDS AND THEIR BALANCE SHEETS—*National Committee on Municipal Accounting,* 1313 *E. 60th St., Chicago* 37, *Ill. Bulletin No.* 5. *Third Edition.* 1947. 76 *pp.* $1.00.

The third edition of this useful booklet, which remains unchanged since its last printing in 1938, describes the various classes of municipal funds and exhibits model balance sheets for each. Recommendations are included for the classification of funds, fund accounting procedure, fund balance sheets, and property and debt accounts. The booklet also contains a statement of the principles of municipal accounting.

Truck Safety

SAFETY SUPERVISION IN MOTOR VEHICLE FLEETS—*Milton D. Kramer, Ed. Division of Association of Casualty and Surety Companies, National Conservation Bureau,* 60 *John St., New York* 7, *N. Y.* 1947. 214 *pp.* $2.25.

The book is designed primarily to meet the needs of safety supervisors, fleet operators, safety engineers, managers, maintenance foremen, personnel directors, and others in the field of commercial vehicle operation and safety. Municipal officials interested in motor truck operations will find valuable the chapters on driver selection, instruction, and supervision, preventive maintenance, and traffic regulations and advanced driving techniques.

Other Reports Received

HARRISBURG, PA.—Part I, $125,000 Proposed Bond Issue. Part II, Financial Study. 1947. C. C. Collings and Company, Fidelity-Trust Building, Broad and Walnut Sts., Philadelphia. Mimeo. Charts. 25 pp.

LEWISTON, MAINE—Municipal Activities. Annual Report. 1947. Lucien Lebel, City Clerk, Illus. Charts. 49 pp.

NEW HAVEN, CONN.—New Haven's Program for Public Improvements. 1948-1953. By the Capital Budget Programming Committee. Charts.

SAUGATUCK, CONN.—Traffic Performance at Urban Street Intersections. By Elroy L. Ericksen. Eno Foundation for Highway Traffic Control. Reprinted from the July 1947 issue of *The Traffic Quarterly.* Charts. Illus.

XUM

It's a Haiss Snow Loader

Doing the work of 80 men... *faster*

One Haiss snow loader does the work of 80 men, and handles up to 15 cubic yards a minute.

Loading high-sided trucks by hand is back-breaking, slow, expensive. But with a Haiss snow loader it's a modern mechanized operation, faster, cheaper, and more dependable.

This machine gets an amazing amount of work done because it is a positive digger and conveyor, operating on the continuous principle. Many communities run their machines all day and all night.

It's a glutton for light snow. And it's the best loader for hard and frozen snow because it is the only machine that digs upward as it loads. This is the loader you can depend on when the going is tough.

Our nearest sales representative will gladly arrange for you to see one in action.

Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss can now do a still better job for its customers... better machines and servicing, larger production, quicker deliveries.

Haiss specializes in equipment to load bulk materials... sand, gravel, stone, coal, topsoil, snow, etc.

Its machines are money-makers for their owners.

George Haiss Manufacturing Co.
140th St. & Park Ave.
New York 51, N. Y.

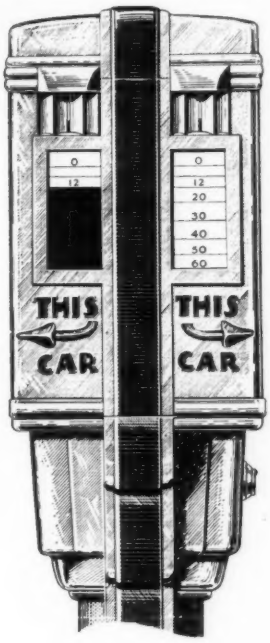
News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

American-La France Making Twin Parking Meters

E. E. O'Neill, president of American-LaFrance-Foamite Corporation of Elmira, N. Y., manufacturers of fire-fighting apparatus and equipment, announces the acquisition of the controlling interest in International Meters, Inc., New York 17.

International Meters, Inc., now operates as a subsidiary of American-La-France-Foamite Corporation, serving as a separate sales company for the distribution of the newly invented Alfco Twin Automatic parking meter



which parks two cars independently of each other, with one meter, one clock, one housing, one pedestal, and one coin box.

The new Alfco Twin meter is manufactured by American-LaFrance-Foamite in its Elmira, N. Y., factory. The first group of the new meters are scheduled for completion on December 15.

The Advertising Corp. Appointed by Pettibone Mulliken

The Pettibone Mulliken Corp., Chicago, Ill., has appointed The Advertising Corp., also of Chicago, to handle its advertising of buckets and dippers for power shovels and draglines. The Advertising Corp. will continue to handle the company's advertising for the railroad-track material division. This advertising firm also handles the accounts of Enterprise Railway Equipment Co., Home Utilities, Inc., and Portable Electric Tools, Inc., all of Chicago.

The company recently added R. H. McCormick to its advertising staff. Mr. McCormick formerly held the position of advertising manager for Vascoloy-Ramet Corp., and American Hoist and Derrick Co.

Pinel Rejoins Griffenhagen Associates

Stanley I. Pinel has recently rejoined the staff of Griffenhagen & Associates, 333 N. Michigan Ave., Chicago 1, Ill., consultants in management, after serving several years as Director of Public Service, St. Petersburg, Fla., as Chief Engineer in the Detroit Area of the Federal Public Housing Authority, and as Director of Research, American Public Works Association.

When Pinel was previously with Griffenhagen, it was in the capacity of senior staff member; his position now is that of principal engineer.

Chlorine Dioxide Kills Bacteria In Water Purification

According to a paper delivered by John Synan of The Mathieson Alkali Works (Inc.), 60 East 42nd St., New York 17, N. Y., at the annual meeting in Boston of the New England Water Works Association, which was held from September 16 to 19, laboratory investigations show that chlorine dioxide is an effective bactericide in all types of contaminated water and is even more efficient than chlorine where organic contamination is low. Moreover, chlorine-dioxide bactericidal action is stable with respect to pH.

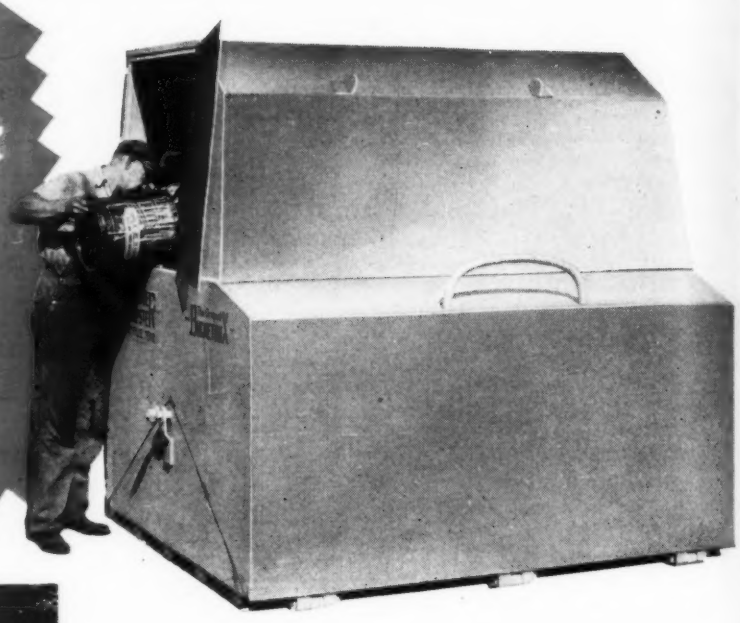
Mr. Synan discussed the introduction of chlorine-dioxide treatment at the plant in Chicopee, Mass., where the result has been, not only a marked reduction in the bacteria count of the final effluent, but also consistently negative results in tests for coliform organisms. The author attributes this to both the bactericidal action of chlorine-dioxide and to the fact that the use of his treatment permits, for the first time, pre-chlorination for disinfection and maintenance of an adequate free chlorine residual.

Fast Priming on Centrifugal Pumps

Fast and sure priming is accomplished on the Jaeger Machine Company's self-priming centrifugal pumps for drainage work by combining "inherent" priming action with "jet" priming—two independent actions which operate simultaneously. Other Jaeger features include replaceable liners or seal rings, Jaeger patented "Lubri-Seal" which is accessible for inspection, self-cleaning shell design, open-type impellers which are adjustable for wear, side panels giving instant access to all operating controls, and quick starting assured by construction which keeps water from spark plugs, carburetor, and crankcase. Jaeger's main office is in Columbus 16, Ohio.

The overall housing on this Jaeger pump protects the engine as well as the pump from weather and dirt.

Here's a more efficient system of TRASH and RUBBISH DISPOSAL



If your town has the problem of unsightly, unsanitary, litter-filled alleys it will certainly pay you to investigate the Dempster-Dumpster System. This remarkable system has helped dozens of towns have sanitary, efficient rubbish disposal, and at an amazingly low cost. Here's how it works. Detachable truck bodies, built in the form of rubbish depositories, are placed at needed points in the business district, factory areas, schools and housing centers. Once the rubbish is placed in the despository, no rats or flies can contaminate it . . . no domestic animal can scatter it . . . it is completely out of the reach of small children. As bodies are filled, a truck hoisting unit makes scheduled collection rounds, picking up each loaded body, in turn, hauls it . . . dumps it and returns the empty to its original position. It's as quick and simple as that . . . only one man, the driver, handles the entire collection operation with the hydraulic hoist.

Savings in payroll and operational expenses are obvious when you consider that one truck hoisting unit with several bodies does the work of 4 or 5 ordinary trucks.

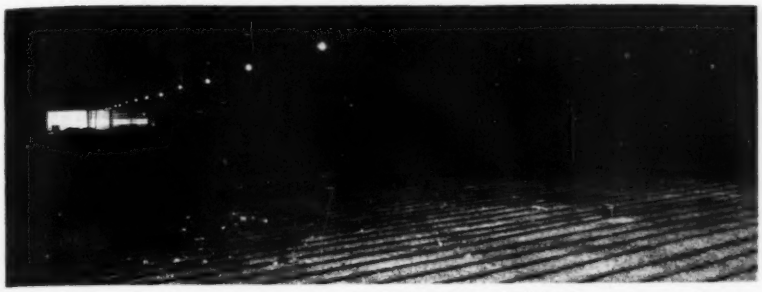
We manufacture bodies in various capacities and models to meet every requirement of rubbish collection. Why not write today for complete information on how the Dempster-Dumpster System can help your town toward a more efficient rubbish disposal system.

Top: 8 Cu. Yd. pyramid type body. Note convenient height and placement of doors. Above left: Hoisting unit, with 10 cu. yd. body in carrying position. Bottom: Body in dumping position . . . load is dumped automatically.

DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS, Inc., 3107 Springdale, Knoxville 17, Tenn.

Detroit's New Bus Garages Are "Floor Heated"



One of the four storage bays, each designed to hold 50 passenger buses. Wrought-iron pipe, fabricated in the form of grids, are shown positioned on the gravel fill before being covered with concrete for the radiant heating system.

To house its new fleet of 430 passenger motor coaches, Detroit Street Railways recently completed a garage-terminal 378 by 241 feet. A second and third are under construction. In each are storage bays for the coaches, repair departments with lubrication pits and built-in repair and testing equipment, and office space.

Each building is radiant-heated throughout with hot-water pipes laid on gravel under a 6-inch concrete floor. Embedded in the concrete floors of the bays and service departments are more than 8 miles of radiant-heating pipes, ¾ inch to 3 inches, with most of it ¾ and 1 inch.

In radiant-heating, the floor becomes a huge, low-temperature heating element operating on the idea of regulating radiant-heat losses of the body. Thus it is possible, in a radiant-heated room, to be comfortable when the air temperature is from 5 to 10 degrees lower than that in a room heated by ordinary methods. Heat emanating from the floor is distributed uniformly, both horizontally and vertically. Snow and ice dropping from vehicles in the winter melt away, and residual water evaporates quickly from the warm floor. Parking the huge new motor coaches, built by Twin Coach Co., Mack Truck Co., White Motor Co., and General Motors Truck Corp., in this building is simplified by the fact that there are no obstructions along floors or walls.

Upwards of 100 garages, auto display rooms, bus depots, and truck terminals have been equipped with radiant-heating systems, according to records on file at A. M. Byers Co., Pittsburgh, Pa., pioneers in the development of this method of space heating in the United States.

Stellwagen Receives Columbus, Ohio, Contract

Robert H. Stellwagen, consulting engineer, 629 Buhl Bldg., Detroit 26, Mich., has received the contract to prepare plans and specifications for a 150-ton addition to the Short Street incinerator plant for Columbus, Ohio. Mr. Stellwagen expects that within sixty days bids for this work will be advertised.

E. Wayne Haley Appointed Director of Sales

E. Wayne Haley has been appointed director of sales for the Southern Alkali Corp., a subsidiary of the Pittsburgh Plate Glass Co., Fifth Ave. and Bellefield St., Pittsburgh, Pa.

Associated with Southern Alkali since 1935, Mr. Haley has served as assistant director of sales during the past 12 years. He succeeds Eli Winkler, who will continue with the firm in the capacity of sales consultant.

As director of sales for the alkali firm, Mr. Haley will maintain headquarters at 30 Rockefeller Plaza, New York, N. Y.

Meet Your Pump Requirements with Matchless Peerless Performance!

PEERLESS PUMPS

PEERLESS CENTRIFUGAL PUMPS

Manufactured in An Extensive Range of Types, Sizes and Capacities to 70,000 G.P.M.

Descriptive Bulletins Available—Request Your Copies

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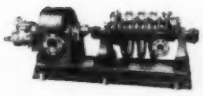
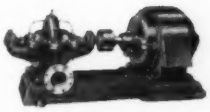


PEERLESS TYPE B PUMPS

Peerless Type B multi-stage pumps are designed for boiler-feed, pipe line and refinery services delivering capacities up to 900 g.p.m. against pressures up to 700 lbs. For electric and other type drives from 60 to 350 h.p.

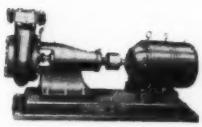
GENERAL SERVICE



PEERLESS TYPE A PUMPS

Peerless Type A pumps afford top-flight, continuous duty operation with capacities from 50 to 70,000 g.p.m. Heads: 15 to 300 ft. All types of drives: 1 to 1000 h.p. Sizes: 2" to 42" discharge. Split-case, single stage, double suction type.

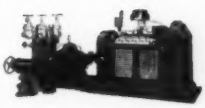
PROCESS SERVICE



PEERLESS TYPE DS PUMPS

Peerless Type DS is the ideal pump for chemical, oil, soap and similar process services. Capacities: 10 to 1500 g.p.m. Heads: up to 231 feet. Handles a wide variety of corrosive or non-corrosive liquids at temperatures to 200° F.; single stage, single suction.

FIRE PROTECTION



PEERLESS FIRE PUMPS

Peerless Underwriters' Approved fire pumps are available for all fire protection services. Capacities: 500 to 2000 g.p.m. Pressures: to 150 lbs.; single and double stage types, for electric, engine, turbine drive or combinations.

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- MOTOR GRADERS
- WHEEL TRACTORS
- TRACK TYPE TRACTORS

Reversible Wheel Tractor Plow

Baker Plows are ready to go!

Yes, let it snow! With Baker plows on hand you need never worry. Snow plow equipment isn't used every day, but when it's needed you want fast action before freezing sets in — capacity to handle the biggest drifts — versatility to handle streets, roads and alleys — dependability, freedom from break-downs, to operate continuously until the job is done.

Baker truck and tractor plows meet every requirement — "know how" that only 38 years of experience can provide. Correctly curved blades; big capacity, dependable hydraulic systems; tripping blades; elimination of dead weight are exclusive advantages which account for the superior performance of Baker Plows—advantages which have made Bakers first choice throughout the snow belt.

BAKER MFG. CO., SPRINGFIELD, ILLINOIS

BAKER

Distributors from "Down Under" Visit Hough Plant

The officials from "down under"—left to right: G. E. Hodgson, L. Perrin, H. V. Davies, C. L. Fox, C. E. Killebrew, Frank G. Hough (Hough Co.), G. H. Bacon, C. G. Eichhorn, G. L. Ferguson, D. B. Holland, Frank Fox and G. A. Tamblyn (Hough Co.).

The Frank G. Hough Co. recently played host to its Australian distributors and International Harvester Export Company officials at the Libertyville, Ill., factory and general offices. Exclusive Australian distributors of Hough loaders and sweepers for International wheel-type and crawler-type tractors, Hough payloaders, and Universal road sweepers, the officials visited the company to study the Hough line of equipment.

A meeting to acquaint them with design and construction features and various applications of the machines was held first. Later there was a tour of the factory, with explanations of phases of production and assembly. In the afternoon, the group visited a number of industrial plants and jobs in the Chicago area where the machines were observed in operation.

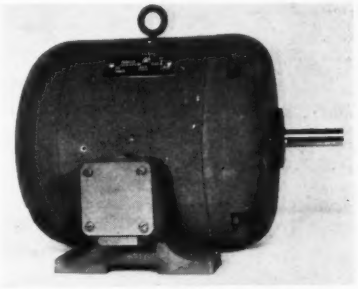
New Series of Totally Enclosed Three-Phase Motors

The Kato Engineering Co., Mankato, Minn., has recently tooled up for building all enclosed 3-phase motors in sizes 1½, 2, and 3 hp.

The squirrel-cage rotor makes use of rolled sheet copper bars, guaranteeing uniformity and low internal rotor resistance.

The rotor is equipped with Norma-Hoffman grease-sealed cartridge-type bearings. Stator windings are completely submerged in varnish, each winding being baked twice until the varnish is properly cured.

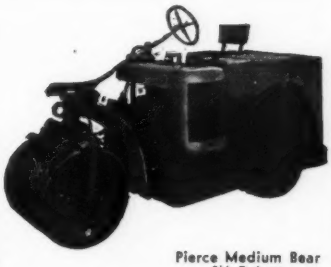
The average readings on a quantity of 1½-hp motors with 1,160 rpm are as follows: amperes, 2.6; volts, 440; power factor, 67%; foot pounds, 6.9; cycles, 60; rpm, 1,160.



A special cast iron outlet box threaded for proper size of conduit is mounted on the side of each motor.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.



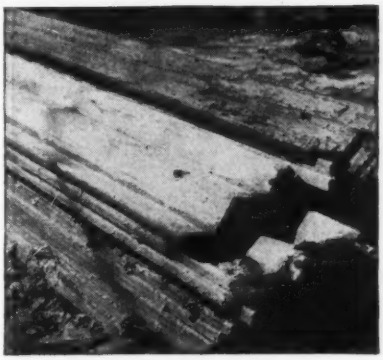
Pierce Medium Bear
3½-5 tons

Pierce Baby Bear
2½-3 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers
Lewis Manufacturing Co.
415 Hoefgen Ave.—San Antonio 6, Tex.

THIS SHEETING PAID OFF AT 100 TO 1



This is how engineers cut costs and speeded the trenching work on an extensive sewer construction program. They specified ARMCO Steel Sheeting and reused it more than 100 times.

The small displacement area of ARMCO Sheeting makes it easy to drive — easy to pull. Corrugated design assures ample strength yet keeps weight down to facilitate handling and speed installation. In driving, sections butt together or are held securely in place by continuous interlocking joints that assure correct alignment and practical water-tightness.

You'll find other economies in ARMCO Sheeting too. It is low in first cost because you buy only the exact weight you need. And since the sheeting is nestable it requires comparatively little space for shipment and storage.

Write us for prices and detailed information. Armco Drainage & Metal Products, Inc., and Associated Companies, 305 Curtis St., Middletown, O.

ARMCO

ARMCO STEEL SHEETING

Famous Westco Turbine-Type Pumps: with renewable liners for high-head, low-speed service.
Fairbanks-Morse-Pomona Vertical Turbine Pumps: Open or closed impellers; oil or water lubricated.
Fairbanks-Morse Centrifugals: single and multi-stage types for broadest range of pumping service.
Fairbanks-Morse Rotaries: for low-head, low capacity work in all industries.

Can ANYONE sell a pump?

No, just anyone can't sell a pump—properly.

It takes a lot of adroit engineering to figure the right pump for any specific job. It takes a broad background of experience to enable a man to be sure he's selling you a pump that will make you a long-term friend and customer.

This engineering ability and experience are yours when you buy from a Fairbanks-Morse-Pomona dealer.

He *knows* pumps. He has the broadest line to choose from; he's backed by all the engineering and production resources of Fairbanks-Morse. *He* can offer you skilled, impartial advice—*he* can sell you the pumping savings and satisfaction you're after.

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

Cleveland Buying White Buses

One of the 20 (with 80 more on order) White coaches ready for service in the municipal Cleveland Transit System; Donald C. Hyde (center), general manager of the Cleveland Transit System, with Robert F. Black (right), president of The White Motor Co., Cleveland 1, Ohio, and Ira S. Snead, vice-president in charge of the bus division.

Lighting Handbook

The new 260-page Westinghouse *Lighting Handbook*, which enlarges upon and brings up to date the one published in 1943, is off the press.

Produced by the Westinghouse Lamp Division's commercial engineering department, the handbook contains a variety of technical data designed to aid illuminating engineers, utility lighting specialists, architects, contractors, lighting fixture salesmen, consulting engineers, and municipal officials.

One of the highlights is a newly developed precalculated foot-candle table which covers seven pages. By using this table, lighting men can predict easily and accurately the results to be attained from almost any type of interior lighting installation with a minimum of mathematics.

The *Lighting Handbook* is available at $2.00 from the Advertising & Sales Promotion Department, Westinghouse Lamp Division, Bloomfield, N. J.

Whirl-A-Way See-Saws For Municipal Parks

The Whirl-A-Way see-saw, manufactured by Williams Iron Works, Inc., 430-438 East 102nd St., New York 29,

N. Y., not only goes up and down, but also swings in a circle. It is easy to assemble and to take down, and can be used either indoors or outdoors, in park playgrounds or children's nurseries. Although the weight of the unit is only 20 pounds, the see-saw can hold two 200-pound persons.

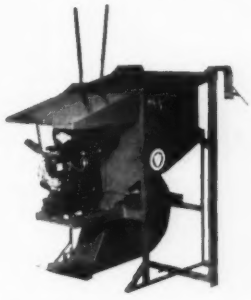
Odorless Roach Control

A new liquid that dries to form a colorless coating, which may be removed with water if desired, and completely rids the premises of roaches within three days, is being manufactured by Gaston Johnston Co., 865 First Ave., New York 17, N. Y.

All roaches that walk across the coating, which remains effective for six months, become paralyzed and die within three hours. Since eggs in roach nests hatch within three days, all roaches are eliminated by that time.

No-Roach is safe and sanitary and so may be used in buildings in which both food and children are housed.

THE "SCOTCHMAN"



TARCO'S SALT SAVER

Actually applies *theoretical* quantities. It's *fast*, mounts on any dump truck or pick-up in three minutes. Handles *bulk* or *bagged* material. Perfect salt pattern, no waste, *ordinarily* saves 50% or more. Full width, or right, or left, complete control. Quality built of *stainless* steel.

TARRANT MFG. CO.
East Ave., Saratoga Spa., N. Y.

HORIZONTAL INFILTRATION COLLECTORS are able to obtain reliable and adequate supplies of ground water where other methods have failed.

The *HORIZONTAL INFILTRATION COLLECTOR* utilizes the waterbearing formation to purify water infiltrated from a nearby stream or lake. It is the modern method of ground water extraction, being the modern successor of the well-known, linear infiltration gallery.

HORIZONTAL INFILTRATION COLLECTORS are designed to be free from encrustation and to furnish a large, pure, permanent ground water supply.

For Complete Information Write to:

RANNEY METHOD WATER SUPPLIES, INCORPORATED
63 S. High Street — Columbus, Ohio
Water Supply Engineers and Contractors

KARPARK

RISES HIGH IN STRENGTH

In the steel of its framework lies the strength of a giant skyscraper. Without this inner strength, a building might be massive and imposing but it would be a poor risk to withstand stresses and strains. Similarly, the strength and rugged dependability of the KARPARK meter is based on more than its tough steel housing and double strength standard. There is sound sturdiness in every part — from highest tensile strength mainspring and machine cut gears and pinions to an escapement so rugged that neither shocks, moisture, cold or heat can stop its operation. Add this durability to easy automatic operation, easy enforcement and easy maintenance and you know why KARPARK is so effective in meeting growing traffic problems and provides such steady, constant revenue. Write for all the facts.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

THE WISE CHOICE

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

TIME DELAY *assures* SAFETY

Wherever time delay (from a fractional second to minutes) is needed, AGASTAT performs efficiently and at low cost. At busy highway intersections AGASTAT is used to show a RED light to both intersections. This *time delay* is the *safety factor* that prevents accidents when traffic tries to "jump the gun."

AGASTAT

ELECTRO PNEUMATIC TIME DELAY RELAY is instantaneously recycling. It lends itself to a wide variety of applications.

May we send you illustrated folder and complete details?

A·G·A

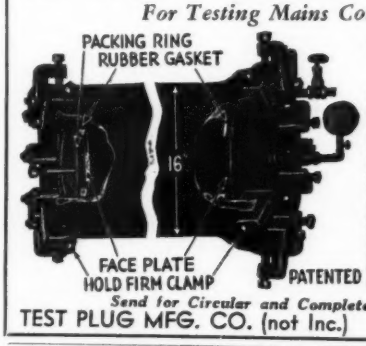
AMERICAN GAS ACCUMULATOR COMPANY

1080 NEWARK AVENUE, ELIZABETH 3, NEW JERSEY

"HOLD FIRM"

A NEW TEST PLUG

For Testing Mains Conveying



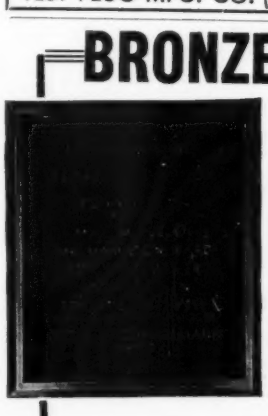
WATER GAS
OIL AIR

For testing cast iron, steel, transite, soil and concrete pipe lines, without the necessity of valves; test pipe as you lay them; eliminate open trench and hazards; special for testing reclaimed pipe, valves and fittings. Installed by any unskilled laborer; withstands 300 lbs. hydrostatic pressure, light in weight; same clamps fit many sizes of pipe. Made in all sizes. Used by the City of Chicago, contractors and municipalities.

Send for Circular and Complete Information

TEST PLUG MFG. CO. (not Inc.) SKOKIE, ILL.

BRONZE TABLETS



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Send for illustrated catalog with complete "order-by-mail" information.

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"Bronze Tablet Headquarters"

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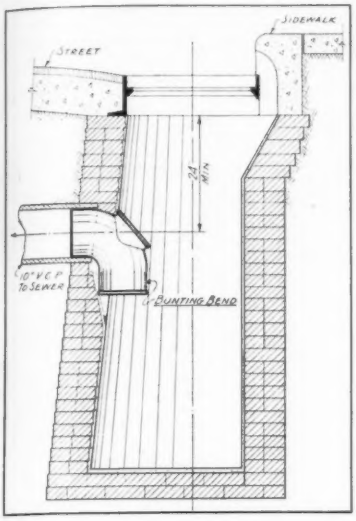
Non-Clog Catch-Basin Trap



If debris rises periodically in a catch-basin well high enough to clog the outlet, as sometimes may happen during periods of heavy rainfall and when the catch-basin cleaning program may lag a little, the new Bunting Bend may prevent the difficulty of flooded streets and complaints by annoyed householders.

The Bunting Bend is made of cast iron designed as a water trap. It differs from the standard trap in that it is fitted with a terra-cotta cap at the quarter point in the bend. If the street floods, as a result of a clogged catch-basin, the terra-cotta cap on the cast-iron bend can be broken with an iron crowbar used by a workman at the street level, thus allowing the water to drain off through this opening.

To restore the catch-basin to service after the emergency is over, all that is required is for the maintenance crew to replace the broken terra-cotta cap with a new one.

The opening in the bend can also be used as a clean-out to flush the line connecting the catch-basin with the sewer.

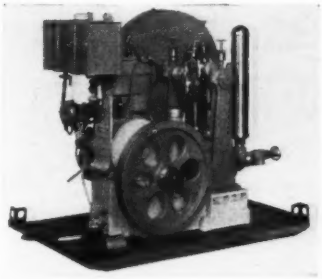
How the Bunting Bend looks when compared with a standard discharge trap. Left: This shows the bend fitted to an ordinary catch basin.

This type of bend is included in specifications now in use by the City and County of San Francisco, Bureau of Engineering. It was developed by Earl R. Bunting, Assistant Superintendent, Bureau of Sewer Repair, in San Francisco. Inquiries about it should be directed to Mr. Bunting at 334 Pacheco St., San Francisco, Calif.

New Nordberg Officials

The Nordberg Mfg. Co., 3073 South Chase Ave., Milwaukee 7, Wis., has advanced to the position of Vice-president the following four managers of product divisions: R. W. Bayerlein, D. A. Cheyette, R. R. Shafter, and H. H. Talboys.

PORTABLE FOREST FIRE PUMP



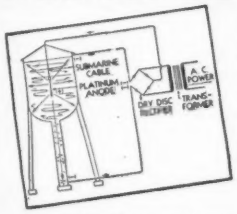
THE GUPTILL PUMP

Here is protection against Forest Fires. A pump designed for dependable service, light and compact enough to be carried, or mounted on a Jeep. A triplex plunger pump delivering full capacity at high pressure.

Write for Information

FITZHENRY-GUPTILL CO.
135 First St., E. Cambridge 41, Mass.

RUSTA RESTOR *Prevents Rusting*



Modern, Service-Proved Cathodic Method Gives Lasting Protection Against Rusting—Minimizes Tank Maintenance—Costs Only Two Mills ($0.002) Per Year Per Square Foot of Surface Protected.

Approved and endorsed by national and state authorities, Rusta Restor, the modern cathodic method, maintains the tank in a "neutralized" state that not only prevents rusting but also removes the products of any earlier rusting. It eliminates both the loss of service, and cost, of interior painting. Rusta Restor equipment is inexpensive to install, and cheap to operate. Used from coast-to-coast. Send for full details today.

RUSTA RESTOR
A DIVISION OF
THE JOHNSTON AND JENNINGS COMPANY
861 ADDISON ROAD • • • CLEVELAND 14, OHIO

ELIMINATE this costly "hit or miss" method!

The Globe GEOPHONE*

locates water or steam leaks without any digging!

** Registered in U. S. Patent Office*

Here are a few facts you should know about the Globe Geophone: 1. It locates a leak in a fraction of the time required by digging methods. 2. It operates on the seismograph-stethoscope principle, locating leaks with unmatched speed and accuracy. 3. In addition to locating steam or water leaks, it is also used successfully in industrial, termite and oil fields.

★ Complete outfit consists of connecting tubes, two Geophone discs, headpiece and leather-covered carrying case **$75**

★ Pipe Phones $3.70 Pipe Finders $100
Dipping Needles $18.50

Globe Phone Mfg. Corp.
(*Manufacturers of Geophones Since* 1918)
READING, MASS., DEPT. Y
Please send me further information on items checked below:

☐ Geophone ☐ Pipe Finders
☐ Pipe Phones ☐ Dipping Needles

NAME .....
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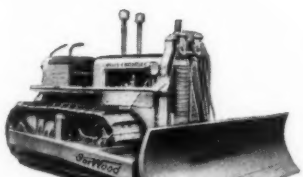
SERVING THE CITY

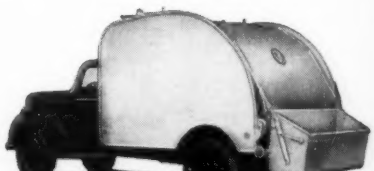
GAR WOOD MUNICIPAL EQUIPMENT SERVES THE CITY CONTINUOUSLY IN A GREAT MANY WAYS—ON A GREAT MANY JOBS. HUNDREDS OF CITIES THROUGHOUT THE COUNTRY HAVE FOUND IT PAYS TO USE GAR WOOD EQUIPMENT; WHETHER IT BE FOR GARBAGE AND REFUSE DISPOSAL, ROAD MAINTENANCE, OR CONSTRUCTION WORK. FOR TROUBLE FREE PERFORMANCE AND ECONOMICAL MAINTENANCE YOU WILL FIND IT WISE TO SPECIFY GAR WOOD

GAR WOOD GW TRADE MARK INDUSTRIES

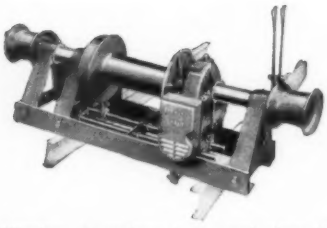
The Load Packer all-enclosed garbage and refuse unit. Compresses loads hydraulically.



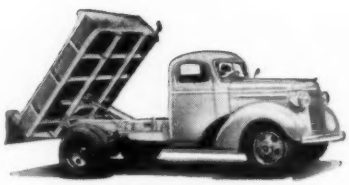
Dozecasters, Tipdozers, Scrapers, Rippers. Sold by Allis-Chalmers tractor dealers.



All-enclosed, sanitary Bucket Loader body for raw garbage, ashes, sweepings, etc.



Winches of various types and sizes for trucks or tractors and all types of jobs.



Hydraulic Hoists and Dump Bodies for trucks or trailers to suit all municipal jobs.

Power-operated truck cranes. Many sizes and capacities for lifting and loading.

CONTACT YOUR NEAREST GAR WOOD BRANCH OR DISTRIBUTOR. YOU'LL FIND ONE IN EVERY MAJOR CITY OF THE UNITED STATES.

ADDITIONAL MUNICIPAL EQUIPMENT INCLUDES DITCHERS, POWER SHOVELS (CONVERTIBLE TO CRANES, DRAGLINES, BACK HOES), POWER FINEGRADERS AND MATERIAL SPREADERS—ALL PRODUCTS OF THE BUCKEYE TRACTION DITCHER DIVISION, FINDLAY, OHIO. THEN TO ROUND OUT A RATHER COMPLETE LINE, THERE IS THE ROAD MAINTENANCE TRUCK PATROL FOR FOUR-WHEEL DRIVE TRUCKS—A PRODUCT OF THE ST. PAUL HYDRAULIC HOIST DIVISION, MINNEAPOLIS, MINN.

GAR WOOD INDUSTRIES, INC.

WAYNE, MICHIGAN

Hoists & Bodies • Road Machinery • Winches & Cranes • Buckeye Ditchers • Truck Tanks • Buckeye Shovels

FWD Re-elects Directors, Makes New Appointments

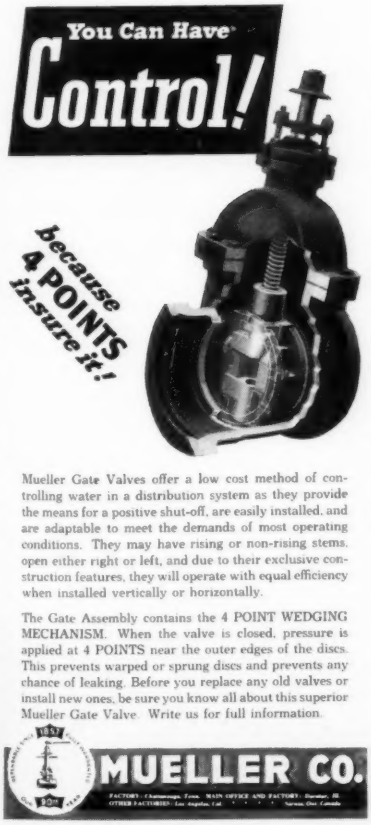
At the recently held annual stockholders' meeting of The Four Wheel Drive Auto Co., Clintonville, Wis., all members of the Board of Directors were reelected, and Walter A. Olen was reelected president for the 38th time at the Board of Directors' meeting that followed.

Joseph D. Cotton, Donald S. DeWitt, and D. J. Rohrer were elected vice-presidents; R. H. Schmidt, vice-president in charge of sales; Robert A. Olen, general manager; S. H. Sanford, secretary; Helen Weller, assistant secretary; J. A. Derissen, treasurer; G. F. Richardson, assistant treasurer. The appointments are already in effect, and the appointees have assumed their new offices.

At the stockholders' meeting, the capitalization of the company was increased from 3 to 6 million dollars.

It was announced that 1947's fiscal year, ending June 30th, has been the largest non-war sales year in its history, with a profit, before taxes and special charges or credits were deducted, of $1,265,524 on net sales of $15,920,302, as compared with profits last year of $669,930 on over $18,000,000 in sales.

The profit for the year ended June 30 was $851,218 after deducting provisions for all taxes, depreciation, and amortization.



Mueller Gate Valves offer a low cost method of controlling water in a distribution system as they provide the means for a positive shut-off, are easily installed, and are adaptable to meet the demands of most operating conditions. They may have rising or non-rising stems, open either right or left, and due to their exclusive construction features, they will operate with equal efficiency when installed vertically or horizontally.

The Gate Assembly contains the 4 POINT WEDGING MECHANISM. When the valve is closed, pressure is applied at 4 POINTS near the outer edges of the discs. This prevents warped or sprung discs and prevents any chance of leaking. Before you replace any old valves or install new ones, be sure you know all about this superior Mueller Gate Valve. Write us for full information.

MUELLER CO.

Now MB POWER GRADER

In the new M-B Power Grader, Meili-Blumberg Corporation, makers of construction and industrial equipment for the past twenty-five years, have combined many new features around International Power to give users low cost road and street maintenance and, with the full line of attachments, an all-year tool. Check these features:

1. Hydraulic power direct on moldboard gives maximum blade pressure.
2. Handles all types of maintenance fast — 2 to 16 miles per hour at low cost.
3. All blade and attachments controlled from operator's platform.
4. Worm gear center-post steering for ease of operation.
5. Big 12 x 38 low-pressure tires turn engine power into PUSH.
6. Powered by big 40 H.P. International Tractor.
7. Husky all-welded frame — resists twisting.
8. Balanced weight means easy steering, steady traction, with approximately 7500 pounds blade pressure.
9. Built rugged to do tough jobs.
10. Attachments for every job — scarifier, snow plow, bulldozer, leaning front wheels, all-weather cab.

MB MARKER

10 TIMES FASTER THAN HAND STRIPING . . . . .

Does slow, tedious hand striping make it impossible for you to keep up with today's traffic demands? Does it endanger your safety record? Then consider using M-B Street Markers. With an M-B Marker, one man stripes ten times as fast as the man marking by hand. The machine handles ALL types of striping . . . can also be used as an all-purpose paint sprayer. Requires no experience. Hand-propelled or self-propelled models.

Complete Markers for Industrial, Street and all Highway Marking jobs. Ask for Bulletin No. 121.

MB MEILI-BLUMBERG CORP.

BOX A-10, NEW HOLSTEIN, WISCONSIN

WAYNE motor SWEEPER

FAST, ECONOMICAL, EASY TO OPERATE AND MAINTAIN

Manufactured in California, the Wayne motor Sweeper embodies the progressive features of design inherent to development in the West. Proven by years of thorough on-the-job tests under all sweeping and street conditions, the exceptional performance of the Wayne has deservingly won the respect of modern municipalities. On streets, parking lots, playgrounds — or any paved surface, the Wayne will do your sweeping work for less cost per mile, and the Wayne sweeps clean.

DELIVERY IS OBTAINABLE IN 60 TO 90 DAYS.

Parked cars and other normal obstructions to clean sweeping are no problem for the Wayne. The three wheel design enables this 2 cubic yard capacity machine to turn sharply, leaving little or no unswept areas.

Write for information

WAYNE motor SWEEPER DIVISION
(BROWN-BEVIS COMPANY)
4900 SANTA FE AVENUE • LOS ANGELES 11, CALIF.

ALLEN - HOWE
LEAK DETECTOR

NEW! NEW! NEW! NEW! NEW!

GREATER OPERATING EASE

GREATER ACCURACY

GREATER SENSITIVITY

The new 1948 Allen-Howe Leak Detector is ruggedly constructed of brass and plastic, assuring years of dependable service. This instrument easily detects and locates underground leaks of water, steam and gas . . . eliminates costly excavations and surveys. A precision instrument of proven performance — thoroughly reliable Allen-Howe water works instruments are used by the U. S. and Foreign governments throughout the world.

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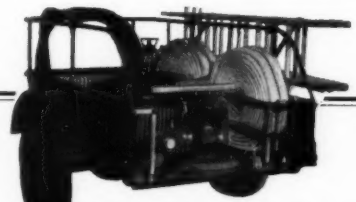
ALLEN-HOWE ELECTRONICS CORP., PEABODY, MASSACHUSETTS



FOR BETTER MUNICIPAL FIRE PROTECTION . . . ADD PORTO-PUMPER

For any fire department, PORTO-PUMPER is a useful and necessary auxiliary. For small towns and villages, PORTO-PUMPER provides complete fire protection with the maximum in portability at lowest cost possible.

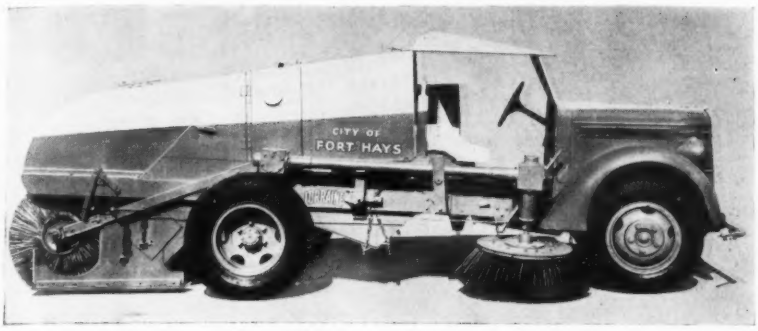
This high-pressure, high-output pumping unit takes water from any source—puts out the fire before it grows to disaster proportions by getting there first—by being there when you want it most. Pump utilizes fog and foam nozzles.

This sturdy unit attaches to any vehicle—goes where heavy equipment cannot—is towed by hand where necessary. Unit consists basically of independently powered high-pressure demountable pump—plus hose, ladders, axe and extinguisher, extra nozzles and hydrant adapters. Pump unit may be purchased separately for booster use.

Best of all, PORTO-PUMPER is lowest priced on the market. Your budget can accommodate it—your safety demands it. Write now for details—be prepared to advise tourist court owners, oil and gas bulk plants, industrials, all those beyond the umbrella of protection by city equipment. 200 gallon storage tank trailer also available.

PORTO-PUMP, INC.
227 IRON STREET DETROIT 7, MICHIGAN

Sweeps Streets at 10 MPH



The Lorraine has a 6-foot 6-inch sweeping path but a high degree of maneuverability permits close work.

The new Lorraine street sweeper features fast sweeping and large capacity. Sweeping speed is up to 10 mph, hopper capacity 2 cubic yards, and traveling speed between jobs is up to 55 mph.

Laying down a fine spray from a 200-gallon tank to settle dust while a revolving gutter broom whirls dirt under the truck and the rear broom sweeps the dirt to dumping position, the Lorraine can scour a large area in a short period of time.

Sweeper controls are operated independently of truck controls for maximum flexibility; a single control dumps the hopper's full load. Parts and workmanship are fully guaranteed by the manufacturer, Lorraine, Inc., 1649 18th St., Santa Monica, Calif.

Goudey to Direct Sanitary Engineering for Truesdail

Dr. Roger W. Truesdail, President, Truesdail Laboratories, Inc., chemists, bacteriologists, and engineers of Los Angeles, announces the appointment of R. F. Goudey, M. S., to its staff to direct the activities of its new Sanitary Engineering Division.

R. F. Goudey

Mr. Goudey served for 13 years as an engineer for the State of California Department of Public Health and was with the Department of Water and Power of Los Angeles for 17 years.

He is a fellow or member of a number of technical societies and is the recipient of The John M. Goodell Prize and The George Warren Fuller Award of the American Water Works Association and has received other national citations.

Presently he is serving as a member of the Executive Committee, Sanitary Engineering Division of the American Society of Civil Engineers, as a National Director of the American Water Works Association and as a member of the Executive Committee, California Section of the American Water Works Association. He is the author of over 70 technical papers on engineering subjects appearing in journals having national circulation.

Under Mr. Goudey's direction the services of Truesdail Laboratories are now extended to include design, investigations, reviews and research involving conservation, treatment, and protection of water quality used for domestic, industrial, and agricultural purposes, and the reclamation, treatment and disposal of sewage and industrial wastes. Specialized fields include coagulation, corrosion, sedimentation conditioning, demineralization, and other water and laboratory tests and interpretations.

CUT ALONG THIS LINE FOR REFERENCE

IMPORTANT MEMORANDUM

FROM: THE GOLDAK COMPANY

○ TO: The "critical" buyer

SUBJECT: ELECTRONIC LOCATING EQUIPMENT

REMARKS: The GOLDAK COMPANY, manufacturers of the world's finest electronic pipe locators, metal locators and leak detectors for 15 years, unconditionally guarantees every piece of equipment sold to give maximum service and top performance

REMEMBER . . . GOLDAK PIPE LOCATORS
GOLDAK LEAK DETECTORS
GOLDAK BOX LOCATORS

Thousands of GOLDAKS are in use all over the world. Every piece of GOLDAK equipment is lightweight, compact, and scientifically designed for simplicity of application.
All circuits shut off automatically when machines are not in use.

○ All GOLDAK equipment uses miniature tubes exclusively . . . economical . . . efficient.

Write for Descriptive Brochures

THE GOLDAK COMPANY
1544 West Glenoaks Blvd., Glendale 1
California

Another Outstanding HOMELITE Development—The New

One Man ELECTRIC CHAIN SAW

The Saw That Cuts Time and Costs

This is it . . . an amazingly light yet rugged and efficient chain saw that will certainly be mighty useful not only for clearing tree damage caused by storms but also for routine jobs . . . a High-Cycle Electric Saw that *one man* can use with ease.

With a Carryable Homelite High-Cycle Gasoline-Engine-Driven Generator as its power supply, you can readily use this 27 lb. chain saw anywhere . . . on highways or in woods. Packed with power, it cuts 15″ hardwood in 47 seconds, 15″ softwood in 18 seconds and handles trees up to 3′ in diameter. In the fastest possible time you can do limbing, felling, bucking and clearing with cuts flush to the ground.

Simple to operate, this saw makes cutting . . . on all cuts, all positions . . . much easier. And there are no fumes or engine heat and vibration to cause fatigue. It is simple in design, sturdy in construction . . . sure to give you greater dependability and lower maintenance costs.

Send for new illustrated bulletin.

Get an Extra Bonus with Homelite Carryable Power

Don't forget this most important point. The same Homelite Carryable Generator that you use to operate your Homelite One Man Chain Saw can also be used to operate circular power saws, electric drills and many other power tools as well as brilliant floodlights for night work. This is possible because High Cycle Homelite Generators also supply 110 volt current suitable for standard universal electric tools.

HOMELITE CORPORATION

CARRYABLE PUMPS • GENERATORS • BLOWERS

109 RIVERDALE AVENUE
PORT CHESTER, NEW YORK

Weimer New Adv. Mgr. Of Pittsburgh Equitable Meter

The Rockwell Mfg. Co., 400 North Lexington Ave., Pittsburgh 8, Pa., has appointed William F. Weimer advertising manager of its Pittsburgh Equitable Meter Division.

William F. Weimer

Weimer, who has held the position of assistant advertising manager for the parent company for the past few years, will have charge of the complete advertising program for the Division's lines of water, gasoline, oil, and gas meters, gas regulators, and other products. He will also continue to assist with the administration of the overall advertising program of Rockwell and its 14 operating divisions and subsidiaries.

New Adding Machine

Incorporated in 1939, the Clary Multiplier Corp., Los Angeles, Calif., is expanding its business in adding machines, according to Sales Manager J. W. Stallings. The Clary machine operates at a speed of 188 cycles per minute, employing the rotary principle. Other speed features are its thumb add-bar, large motorized control bars, feather-touch keys, and functional key grouping. The company has 60 branch and dealer outlets over the country, and sales are made only when immediate delivery can be assured.

Cutting the Corners With a Power Mower

The Cunningham power mower has a 3-foot, variable-speed sickle bar which makes it particularly useful for cutting corners that require careful negotiation. It is well suited for cleaning up odd-shaped right-of-ways; for cutting around culverts, guard rails, signs, and even tightly infested weed areas is no problem.

The engine is a 1½-hp, single cylinder, 4-cycle, rope start engine with a float feed carburetor. The throttle control is on the handle bars, which are adjustable in height. The cutting width is 36 inches.

The Cunningham power mower.

Removed easily by loosening four bolts, the motor can be detached for use on other power jobs or can be left on the mower and belted directly to power driven machinery. The machine is manufactured by James Cunningham, Son & Co., 13 Canal St., Rochester 8, N. Y.

Garretson Retires from Leeds & Northrup

L. R. Garretson, Advertising Manager of Leeds & Northrup Co., Philadelphia, Pa., for the past 22 years, announces his retirement, made necessary because of poor health.

Mr. Garretson's successor is Kenneth W. Conners, who has been a member of the Advertising Division since 1934.

SAVE MONEY THREE WAYS!

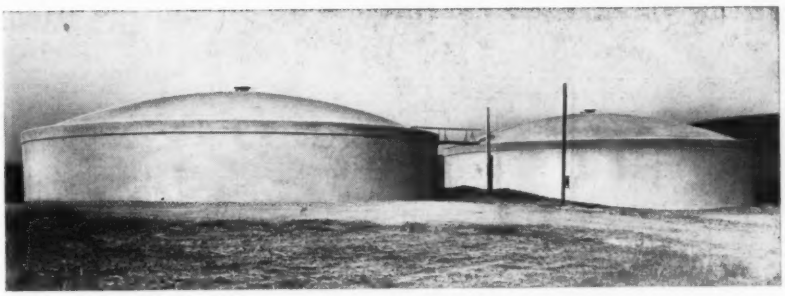
The Modern Lawn Mower Sharpener saves you money three ways in your maintenance operations. • Modernize • Standardize • Economize—the Modern way.

Send for FREE Bulletin No. 25A, for details.

MODERN MANUFACTURING COMPANY

160 N. FAIR OAKS PASADENA, CALIF.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.



• PRE-STRESSED "GUNITE" TANKS •

Above are shown two 80' diameter 750,000 gallon prestressed "GUNITE" water storage tanks with "GUNITE" dome roofs. We built these tanks in 1943 for the Borough of Schuylkill Haven, Penna.

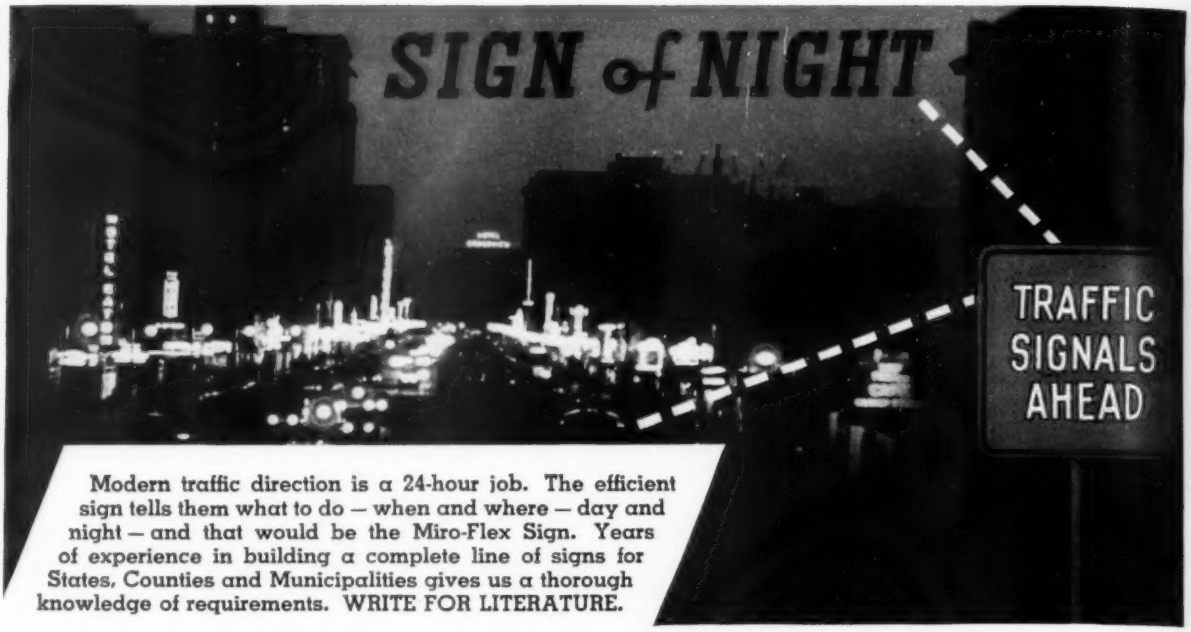
Prestressed "GUNITE" produces a water storage tank which is bottle tight and maintenance free. They may be built either at ground level, completely underground with earth covering over the dome roof, or may be in the form of stand-pipes or elevated tanks.

Our experience in this field includes scores of tanks and silos of many types ranging up to two and one-half million gallons capacity.

Our 72 page Bulletin D2300 describes this method of construction fully and also other uses of "GUNITE."

Write for your free copy of Bulletin D2300 today.

MANUFACTURERS OF THE "CEMENT GUN"

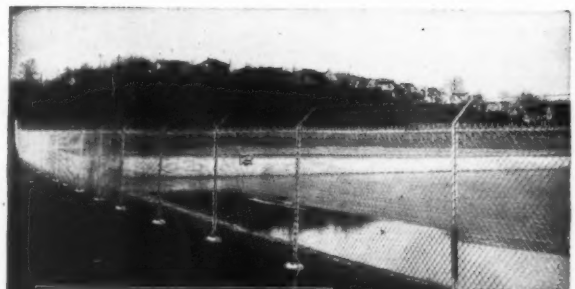


Modern traffic direction is a 24-hour job. The efficient sign tells them what to do — when and where — day and night — and that would be the Miro-Flex Sign. Years of experience in building a complete line of signs for States, Counties and Municipalities gives us a thorough knowledge of requirements. WRITE FOR LITERATURE.

MANUFACTURED BY

MIRO-FLEX COMPANY

1824 EAST SECOND STREET • WICHITA, KANSAS



PROTECTING THE NATION'S RESERVOIRS!

Experts in metal fabrications since 1886

Stewart 3TH Non-Climbable Chain Link Wire Fence assures the utmost in protection for reservoirs and all other public property. Stewart products for protective purposes also include: Wire Window Guards, Wire Mesh Partitions and Steel Folding Gates. When writing for information please mention products in which you are especially interested.

THE STEWART IRON WORKS CO., INC.
1421 Stewart Block Cincinnati 1, Ohio

Stewart IRON and WIRE FENCES

FLINK Self-Feeding Material Spreader

Spreads sand, cinders and all other granular materials. Fits any dump truck as a replacement end gate. Does not limit use of truck to spreading alone. For ice control, resurfacing, seal coating, dust control, and roadwork of all kinds. Spreads full or half width of street, forward or backing up. Hydraulic drive and rear wheel chain drive models. Controlled from cab. Write for literature. *For name of distributor near you, write*

FLINK COMPANY
Dept. AC, Streator, Illinois

LEADITE

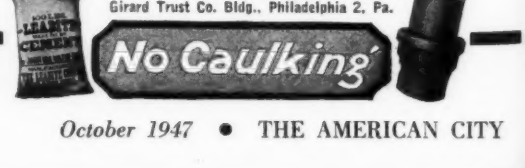
FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured — *No Large Bell-holes to Dig* — *Saves at Least 75%*

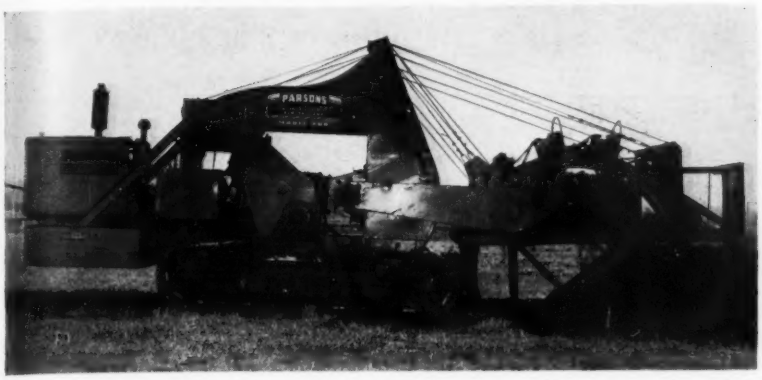
Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years • Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.



New Pipeline and Drainage Trencher



The Parsons 200 Wheel Trenchliner is powered by gas or diesel engine.

The Parsons Co., a Koehring subsidiary located at Newton, Iowa, has recently announced a new pipeline and drainage trencher, the Parsons 200 Wheel Trenchliner.

Among the features incorporated in the machine are pivot wheel mounting, which the manufacturers claim simplifies grade adjustments, particularly in drainage work; a tile chute which assures rapid tile-laying output, and a choice of 50 digging speeds. The Trenchliner digs to a depth of 5 feet 6 inches, with a maximum digging width of 24 inches. Digging speeds range from 2.5 inches to 20 feet per minute. Koehring shovel-type crawler shoes, 18 inches or 24 inches, as well as tractor-type shoes, can be furnished.

Gannett Fleming Corddry & Carpenter Work in Colombia

Four engineers from the firm of Gannett Fleming Corddry & Carpenter, Inc., Harrisburg, Pa., have begun work in cooperation with Frederick Snare Corp., International Contractors, New York, N. Y., on the design of dams, pipe lines, and other structures for the enlargement of the present supply of water for Medellin, Colombia, South America. Heading the party of engineers is J. D. Carpenter, vice-president of the organization.

Special Paints for Water And Sewage Treatment Plants

Recent experiments with Inertol hard-surface enamels have shown that these paints stand up particularly well under such adverse conditions as exposure to chemical fumes and excessive moisture encountered in sewage and water plants. These conditions, which cause blistering and peeling of most paints, have been conquered by Inertol.

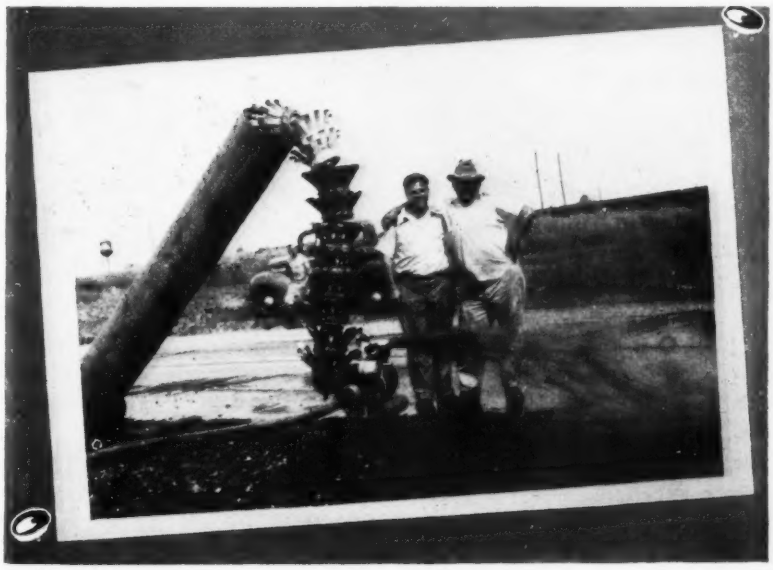
L. S. Duckworth, Superintendent of filtration at the Lancaster, Pa., water works plant, experienced paint peeling and blistering in the filter room. Excellent results have been achieved following painting with Ramuc Utility Enamel, which is a rubber-base coating for non-submerged concrete, steel, and wood.

In the construction of the York, Pa., water works plant, all intake tunnels, basins, and submerged concrete were waterproofed with Inertol #49, a protective coating which imparts neither taste nor odor to the drinking water.

Paint on the walls and floors of the Metropolitan District Sewage Treatment Plant in Hartford Conn., stood up after a week's flooding.

Illustrated literature may be obtained which gives full details of application and prescribed use of the various products. Write to the Inertol Co., Inc., at either Newark 5, N. J., or San Francisco 7, Calif.

***another* "SNAP"—**



FOR "FLEXIBLE" TOOLS AND EXPERIENCE

Actual snapshot shows 12" "Flexible" pressure line scraper at the end of its run. Sizes of pipe cleaned included 6", 8", 12", 16" and 20" lines.

Another "snap" for the Album of "Flexible" Tools and Experience shows this run in the 12" water main on Jersey Avenue, New Brunswick, N. J. Work was carried through to completion in fast time, at low cost and with a minimum of inconvenience to water users. As in most "Flexible" operations, this New Brunswick job was taken on a 100 per cent contract basis. Depending, however, upon customer option, "Flexible" also contracts tools and supervision, rents tools, or makes outright tool sales for all line cleaning requirements.

YOUR pipe cleaning needs are important. It will pay you to check "Flexible" today on any basis — equipment, methods, cost.

FLEXIBLE UNDERGROUND PIPE CLEANING CO.

9059 Venice Blvd., Los Angeles, California

855 Board of Trade Bldg. Chicago 4, Ill.
401 Broadway New York 13
147 Hillside Ter. Irvington, N. J.
P. O. Box 165 Atlanta
1624 Harmon Place Minneapolis 3, Minn.
29 Cerdan Ave. Roslindale 31, Mass.
P. O. Box 694 Pittsburgh
P. O. Box 447 Lancaster, Texas
41 Greenway St. Hamden, Conn.

It's Comfort You Want

REAR WINDOW VISION INCREASED 60%
DOOR OPENINGS FOUR INCHES WIDER
3-POINT CAB MOUNTING AND RUBBER STABILIZERS
SEATING WIDTH INCREASED 8 INCHES
73 INDIVIDUALLY WRAPPED SPRINGS
TUBULAR FRAMED ADJUSTABLE SEATS
WINDSHIELD VISION INCREASED 20%
FAMOUS BALL BEARING STEERING
EASIER CLUTCH PEDAL ACTION
CIRCULATING FRESH AIR VENTILATION
RADIO AVAILABLE IF YOU WANT IT
COMPLETE INSULATION AND SOUNDPROOFING

See the *Brand New* GMC Postwar Cab

There's no truck cab on the road that can surpass a new light-medium duty GMC in advanced features. See what's been done to add to the comfort of truck riding. Look what's been done to take the work out of truck driving. There's more roominess than drivers have ever known before. The fresh air ventilation system is the equal of that in the finest passenger cars.

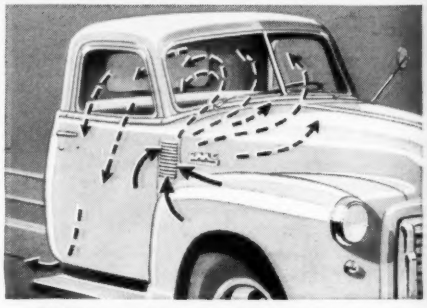
These new light and medium duty GMC models give you much more for your money in riding comfort and driving convenience. And they give you more in good looks . . . in safety . . . in dependable performance . . . in rugged construction and extra value all the way through!

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL



GMC's new cabs circulate fresh air by a revolutionary ventilating system. And you can have forced air heating and defrosting, too, if desired.

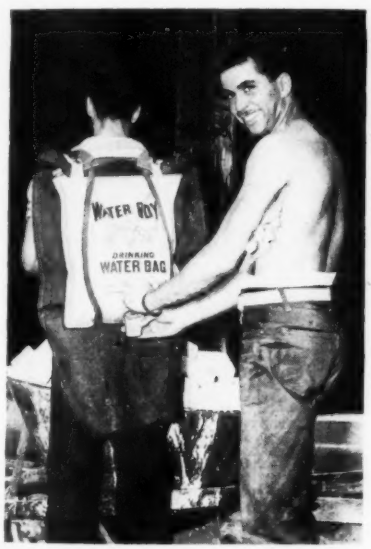
New GMC grilles incorporate a protecting bar of heavy bumper stock at top and sides. Frame mounting and angle bracing add greater strength.

Chain-Saw Display

Five miniature woodsmen, booted and mackinawed, point out the most important features of the Disston chain saw, manufactured by Henry Disston & Sons, Inc., 965 Tacony, Philadelphia, Pa., in a display that is now appearing in the windows and show rooms of Disston distributors throughout the country.

Inanimate "Water Boy" Always on Tap

A new type of "Water Boy" for construction jobs is a large canvas bag equipped with shoulder harness and apron that straps to the back of the water carrier, enabling him to climb ladders and make the rounds wherever men are working.



The "Water Boy" is conveniently carried to a worker.

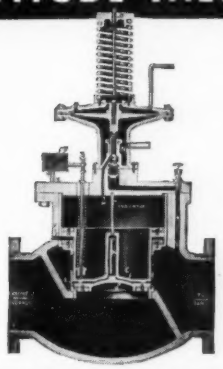
Equipped with a sanitary chrome spigot at the bottom which can be used as a faucet to fill cups or turned up and used as a bubbling fountain, the "Water Boy" allows water to seep slowly through and be evaporated by the air, keeping the drinking water inside the bag cool and fresh. The bag, which holds five gallons of water, will be sold through construction equipment distributors. Further information may be obtained from the H. Wenzel Tent & Duck Co., 1037 Paul St., St. Louis 4, Mo.

Francis C. Hersey, Vice-Pres. Of Hersey Mfg. Co., Dies

Francis C. Hersey, treasurer and vice-president of the Hersey Mfg. Co., E and Second Sts., South Boston, Mass., died at the age of 73 after a brief illness.

Mr. Hersey joined the company in 1894 as a salesman. He later became purchasing agent and, upon the death of his uncle, succeeded to the treasurership, which he held until his death.

AUTOMATIC "STOP-STARTER" GOLDEN-ANDERSON ALTITUDE VALVES



Eliminate all water surges and shock

Installed where a single line is used for both supply and discharge, the valve will maintain a constant water level within 3" to 12" variation and by means of the "stop-starter" switch stops the pump as the valve closes.

Let GOLDEN-ANDERSON Engineers, Solve your Flow Control Problems!

GA
GOLDEN-ANDERSON VALVE Specialty Company
PITTSBURGH 22, PA.

EMERGENCY POWER INSURANCE!

FAIRBANKS-MORSE GENERATING SETS

INSURE yourself NOW against electric power failure. These performance-proved generating sets, installed as stand-by units, will give dependable service even under continuous, heavy-duty operation. A.C. and D.C. types, remote and automatic start, 350- to 35,000-watt capacities. Send today for FREE literature!

Fairbanks-Morse

A name worth remembering

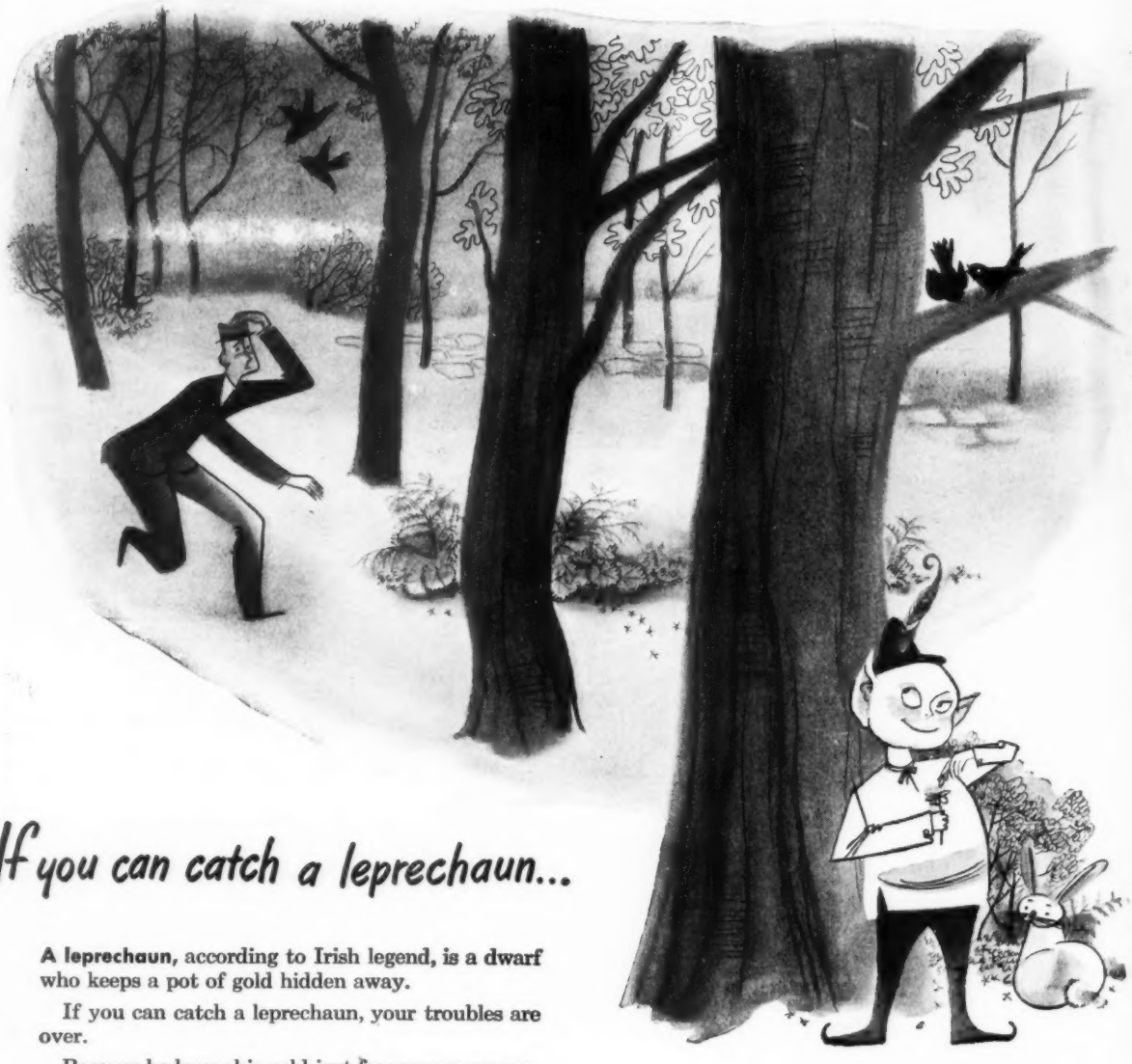
FAIRBANKS, MORSE & CO., Dept. N 10
Chicago 5, Illinois
Please send free literature on Fairbanks-Morse Generating Sets.
Name.....
Address.....
City..... State.....

CITY SURVEYS

WATER DEPT. OPERATIONS
STREET LIGHT OPERATIONS
BUDGETARY CONTROL AND FORECASTING
HOSPITAL FACILITIES
FINANCIAL; FISCAL, ECONOMIC
FIRE DEPT. AND HYDRANTS
TAX RATES, APPRAISALS AND EVALUATIONS
SCHOOL DISTRICT ECONOMIES
TRANSPORTATION
STREET TRAFFIC AND PARKING
GARBAGE DISPOSAL
MUNICIPAL ZONING AND PLANNING
CIVIL SERVICE AND PERSONNEL
SPECIAL PROJECTS
UTILITY RATES

OVER 20 YEARS' SERVICE

C.T. GILLIAM & ASSOCIATES
6311 NORTH FIGUEROA ST.
LOS ANGELES 42 • ALBANY 4545



If you can catch a leprechaun...

A leprechaun, according to Irish legend, **is a dwarf** who keeps a pot of gold hidden away.

If you can catch a leprechaun, your troubles are over.

Because he keeps his gold just for ransom money. If you catch him, he'll quickly tell you where his gold is, so you let him go.

The best place to look for a leprechaun is in the woods. They're green, and only about nine inches tall, so you'll have to—

Or maybe you don't believe in leprechauns.

Maybe it would be more practical to just keep working for your money. But you can learn one good lesson from these little fellows. A small pot of gold put to one side is a great help when trouble catches *you*.

And there's a much faster and easier way to get your pot of gold than by catching leprechauns. You can buy U. S. Savings Bonds through an *automatic* purchase plan.

If you're employed you can sign up for the Payroll Savings Plan. If you have a bank account you can sign up for the Bond-A-Month Plan. Either way, your pot of gold just saves itself, painlessly and automatically.

And your money increases one third every ten years. That would make a leprechaun turn even greener with envy.

Save the easy, automatic way—with U.S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

Hugh L. Baker Promoted In Mueller Co. Sales Dept.

Hugh L. Baker has been promoted to the position of general sales manager of the Mueller Co., Decatur 70, Ill., according to an announcement by J. W. Simpson, Vice-president in charge of sales, who will continue in an advisory capacity.

J. W. Simpson

Mr. Baker, who had held the position of assistant sales manager, will have working with him Robert K. Levey, formerly assistant sales manager, who will now handle promotional and sales personnel work and who will eventually branch into extensive sales territorial work.

Hugh L. Baker

Mr. Simpson has been a member of Mueller Co. since 1899, having started as a messenger boy with Hieronymus Mueller, the founder of the company. By 1916, he had advanced to the position of assistant to the president.

MONITOR COVERS

For 24", 30" and 36" diameter meter pit barrels

Monitor Covers have a 20" lid opening and are 7" in depth, with inner lid optional. For larger meters or for multiple settings they provide protection plus easy accessibility. Catalog with complete information sent on request.

The FORD METER BOX COMPANY, INC.
Wabash, Indiana

JACKSON MUNICIPAL PAVING UNIT

Knocks the Socks off PAVING COSTS!

This revolutionary new development in Municipal Paving Units has definitely proved that it can place perfectly upwards of 65 cubic yards of concrete in a single hour!

FURTHERMORE, IT EMPLOYS THE ONLY SCREED THAT WILL:

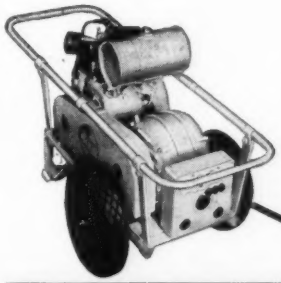
1. Undercut at side forms,
2. Roll back for second pass.
3. Strike-off crowns, both regular and inverted.
4. Permit operators to work from front, rear or sides.

In addition, the screed has such a strong tendency to propel itself in the forward direction that only small effort is necessary to strike-off stiff mixes of concrete. Manholes and storm sewers are no handicap due to the fact the screed does not reciprocate. Does an excellent job of vibrating concrete in slab depths up to 10 inches. Can be used to great advantage on any slab width from 6' on up to any practicable width. For radically reduced costs and far greater production, by all means write for complete details of this remarkable paving unit RIGHT NOW!

The COMPLETE UNIT CONSISTS OF:

1 The Model SC200 Screed (for slabs up to 16' wide) or Model SC202 (for slab widths from 16' and up) — activated by the famous JACKSON Vibratory motor. Light weight, easily transported — quickly converted from one slab width to another.

2 One of our famous Portable Power Plants which provide a wide range of vibratory frequencies thus assuring perfect placement of any concrete mix usually specified. These husky plants are Wisconsin engine powered and have permanent magnet generators which require no adjustment or maintenance.



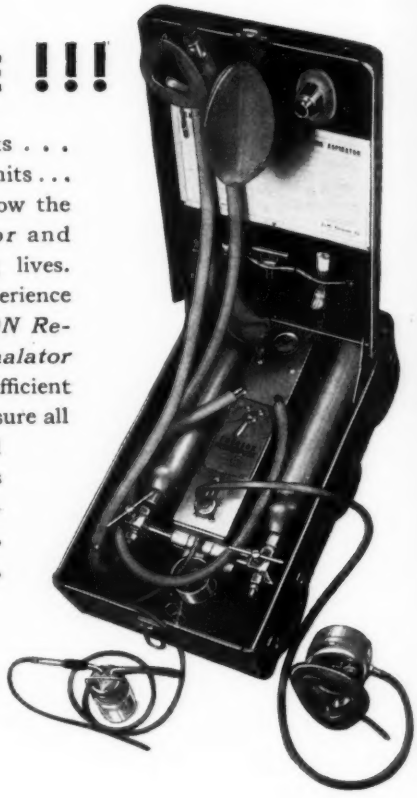
MODEL M-1 POWER PLANT

furnished with Model SC200 Screed. Capacity: 1.25 K.V.A. Generates both single phase and 3-phase 110 Volt 60 Cycle AC. Also ideal for operating lights, vibrators and powers tools.

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

EMERSON TO ~~THE~~ EVERY RESCUE !!!

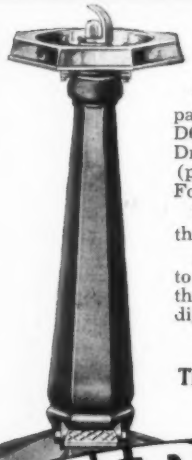
Fire and police departments . . . rescue squads . . . first aid units . . . public beaches . . . *all* know the *EMERSON Resuscitator* and what it means in saving lives. Medical research and experience have proved the *EMERSON Resuscitator-Aspirator-Inhalator* features to be dependably efficient in every emergency . . . Be sure all *your* municipal mobile and stationary equipment has the latest on-the-spot automatic resuscitator . . . EMERSON'S compact, easy-to-operate unit.



WRITE FOR YOUR COPY OF THE BULLETIN, "ON THE SPOT RESUSCITATION WITH EMERSON."

J. H. EMERSON CO.

22 COTTAGE PARK AVENUE CAMBRIDGE, MASS.



A BRIGHT GREEN COAT

This month a coat of green paint will again make your MURDOCK Hydrants and Outdoor Drinking Fountains look like new (polish bowls of the Drinking Fountains).

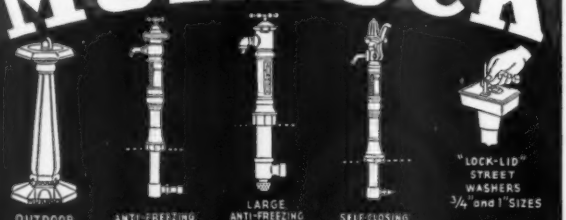
It adds to their life as well as their appearance.

And should it become necessary to replace a washer, remember that that can be done without digging up fountain.

"It Pays to Buy MURDOCK."

The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio

MURDOCK


OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 1½" TO 2" INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES

WORTHINGTON-GAMON

LIQUID METERS

All Sizes All Types

Worthington-Gamon Meter Co.
Subsidiary
WORTHINGTON PUMP & MACHINERY CORP.
296 South Street Newark 5, New Jersey

Caley Joins Mack

John G. Caley has been appointed manager of the National Accounts Department for the Southern Division of Mack Trucks, Inc., Empire State Bldg., New York, N. Y.

John G. Caley

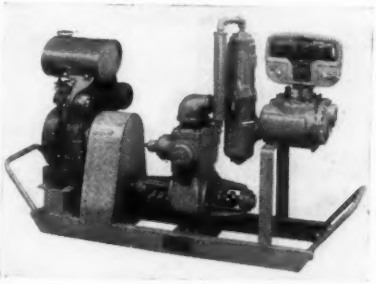
Mr. Caley's previous positions have included that of Regional Director for the Office of Defense Transportation in the Southeast during the war. Previously, he had been associated with the Carley Trailer and Equipment Co., Atlanta, Ga., and with Transportation, Inc.

In his present appointment, he will work with the six factory branches and about 200 dealers of Mack trucks in the Southern Division. His headquarters will be in Atlanta.

"On-the-Field" Fueling For Municipal Airports

The Harmeco Model H-760-B, manufactured by the Harman Equipment Co., 3605 E. Olympic Blvd., Los Angeles 23, Calif., was designed for rapid transfer of fuel and, although its greatest adaptation is for airplane fueling "on the field," the unit may also be used efficiently in fueling from underground storage tanks and from drums or tank trucks.

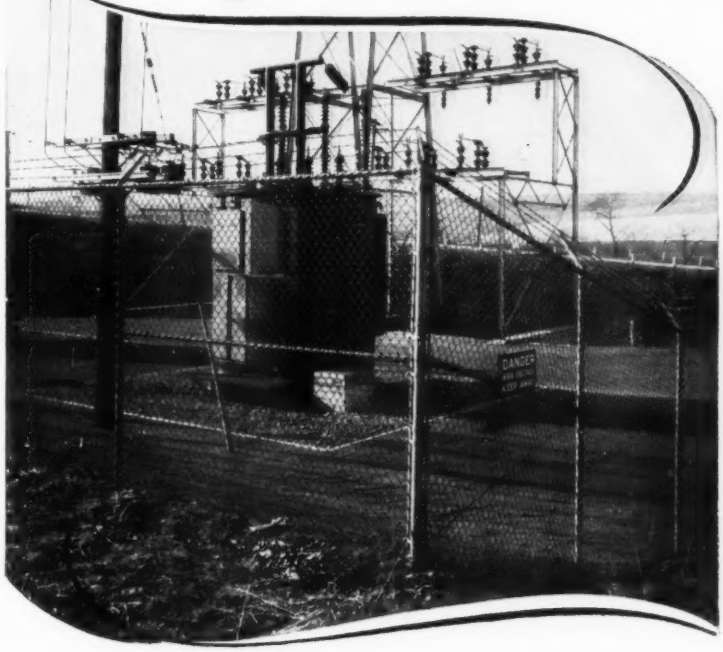
Enough power to pump 100 gallons of gasoline a minute is contained in the small portable gasoline pump and meter unit which is powered by a



A pressure-actuated by-pass valve, an integral part of the Harmeco pump, permits continued operation of the engine even when the discharge line is closed without overloading the engine.

Salsbury air-cooled engine. Packing 6 hp into 56 pounds of weight and 1⅛ cubic feet of space, the engine has a high-efficiency air cleaner and an external, detachable-type magneto. The reliability of the engine during high-loading periods is increased by a gear-type positive pressure oil pump which, according to the manufacturers, is unique in this type of power plant.

Long Life to your project



...with Cyclone Fence protection

BETWEEN mischief-makers, vandals and plain carelessness, public projects lead a hard life. Enclose your project with sturdy Cyclone Chain Link Fence to reduce the wear and tear . . . to help assure it a longer life and a happier one. There's a type to fit every requirement—from parks to public utilities and from airports to swimming pools.

We invite you to send for our free book and judge for yourself the special features of design, construction and installation which make Cyclone "tops" in protection.

Put U·S·S Cyclone Fence right in the plans, and you get maximum harmony of design . . . years of economical, trouble-free protection. Our engineers are available, without obligation, to help you in planning and estimating. And remember, *no job is too large or too small for Cyclone.*

Send for FREE 32-page Book. Profusely illustrated. Full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, etc. Just mail the coupon.

CYCLONE FENCE DIVISION
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Cyclone Fence
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Please send me, free of charge, your 32-page book on Fence.

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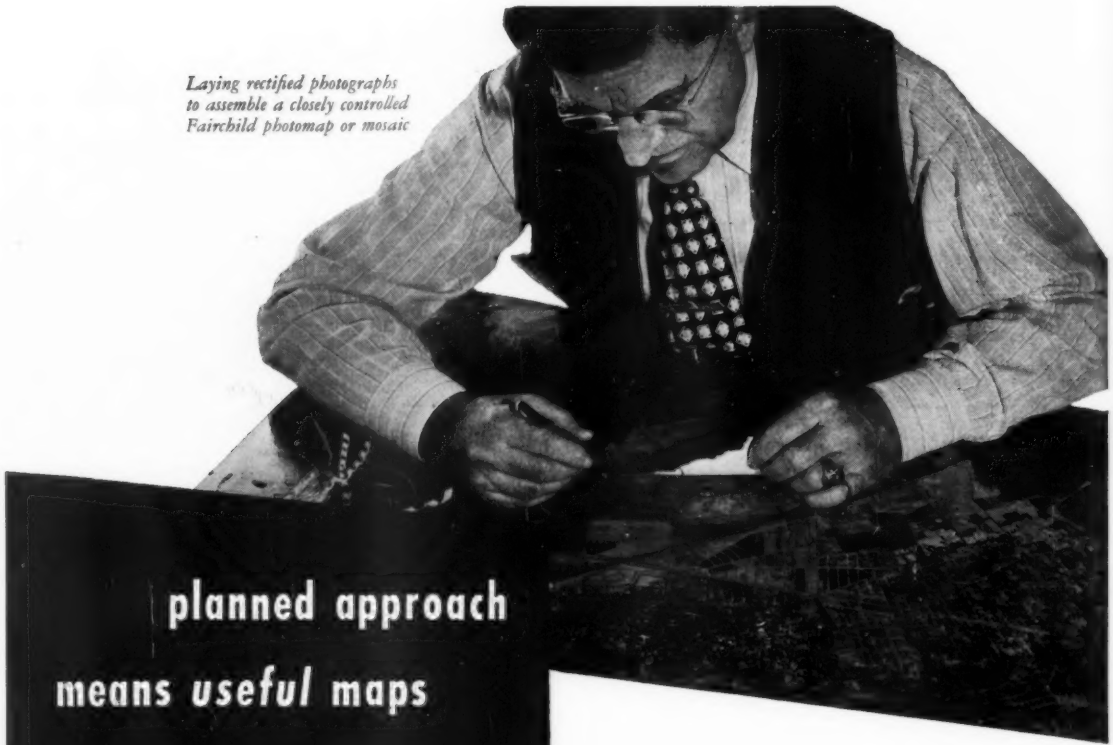
UNITED STATES STEEL



Laying rectified photographs to assemble a closely controlled Fairchild photomap or mosaic

planned approach means *useful* maps

. . . for better management and engineering

FIRST THINGS FIRST. The survey will be practical and economical only if the preliminary plan is right. Good planning means balancing the kind of map with the requirements of the project at hand. This is a Fairchild service that will save you money. It's a service that makes full use of the simpler and better ways of doing a job.

EXPERIENCE IS WHAT COUNTS—experience in the complexities of aerial photogrammetry—experience in developing the right plan where it's needed. Fairchild has that experience. Fairchild clients have expressed much satisfaction with the way in which Fairchild engineers have organized and conducted their surveys.

WHEN PLANNING A SURVEY, use the Fairchild preliminary consultation service, for which there is no fee.

For Industry, Commerce and Public Works

Since 1920, Fairchild has served clients the world over . . . conducting domestic and expeditionary aerial surveys in the fields of:

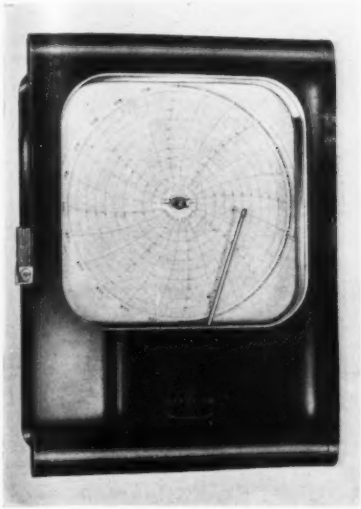
Petroleum	Highways	Taxation
Mining	Railroads	Harbors
Geology	Traffic	Flood Control
Forestry	Utilities	City Planning
Water Ways	Pipe Lines	Legal Evidence

Fairchild AERIAL SURVEYS, INC.

Photogrammetric Engineers

224 EAST ELEVENTH STREET, LOS ANGELES 15, CALIFORNIA • 21-21 FORTY-FIRST AVENUE, LONG ISLAND CITY 1, N.Y.

Recording Thermometers And Gages



Bristol's new Series 500 recorder.

The Bristol Co., Waterbury 91, Conn., has announced a new line of recording thermometers and gages known as the Series 500 line, available in 8-inch and 12-inch sizes, in a variety of ranges.

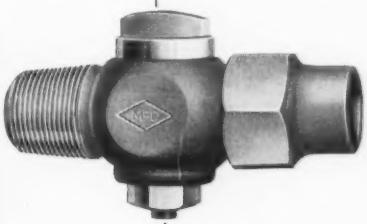
Operating on the same basic principles as previously produced thermometers and gages, the Series 500 is housed in a newly-developed modern case which makes them easier to use and more convenient to service. Mounted on either a wall, front of panel, or flush on a panel, the instruments are protected with a heavy inlaid sponge-rubber door gasket, flush roll-type door handle, and non-projecting door hinges.

Pen arms are pivoted on stainless steel journals with the pen arm shaft supported at both ends in a rigid one-piece mounting. The journals are ground and polished to provide low-friction action. Link members between the measuring element and pen-arm mechanism are readily removable without tools and can be equipped with over-range and under-range two-way spring when required.

George S. Menninger Receives I. H. Appointment

W. K. Perkins, manager of sales, International Harvester motor truck division, has announced the appointment of George S. Menninger as supervisor of motor truck dealer service, replacing C. W. Leslie, who has been appointed retail manager at the newly opened Archer Avenue service station in Chicago. Menninger began his Harvester career at Amarillo, Texas, in 1933, and served in various sales and service capacities until he was called to Chicago in July 1942, as assistant sales engineer.

PROVED
and
IMPROVED



...McDonald's Diamond Line

Almost a century of supplying highest quality waterworks goods is McDonald's best recommendation. Proved and improved throughout the years, McDonald's Diamond Line products set the pace . . . for dependability . . . for precision manufacturing . . . for long service. Illustrated is a Diamond Line Corporation Stop for copper service pipe. Inlet is Mueller Thread. Outlet is Mueller Service Pipe Thread for Copper Tubing, same size as Stop, except ⅝ inch which is for ¾ inch Copper Tubing. In sizes ½, ⅝, ¾, 1, 1¼, 1½ and 2 inches.

EST. 1856
McDonald

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
BRASS GOODS • PUMPS • OIL EQUIPMENT

Air Curtain Guide Plates

For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines *without* coming in contact with the surface.

Special striping guns by DeVilbiss, air-actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway Zone-marking material is applied through K-C equipment than through any other make.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio

Be RIGHT on the Job with Glengarrie Poplin!

Look for this Label in Your Uniform, Utility and Work Shirts!

REMEMBER, top quality uniform shirts start with top quality shirting. To be sure you get the best, specify Glengarrie Poplin . . . every phase of manufacture takes place in Reeves own mills and finishing plant.

Glengarrie Poplin is a fine, high-count, combed yarn shirting. It's Sanforized* and its vat dyed colors are fast to sun, water and perspiration.

It saves you money and guarantees that your shirts will still look smart after continued wear and washing. Demand Glengarrie Poplin for shirts that are *right* on the job.

**Residual shrinkage less than 1%.*

THE REEVES FABRIC GROUP INCLUDES:

Reeves Army Twill • Reeveking Gabardine
Glengarrie Poplin • Marine Herringbone
Byrd Cloth • Warrior Twill • Mountain Cloth
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MADE OF FINE COTTONS

SPINNING WEAVING DYEING FINISHING
Reeves FABRICS

"FROM COTTON TO CUTTER"

REEVES BROTHERS, INC.

54 WORTH STREET, NEW YORK 13, N. Y.

REPRESENTATIVES IN: *Akron • Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • Portland, Ore. • St. Louis • Montreal • Toronto*

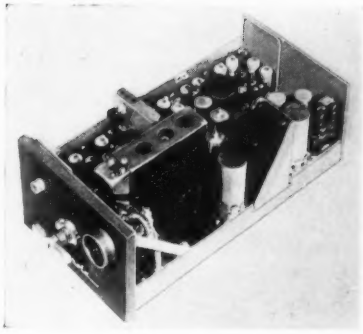
Universal Concrete Adds Engineers to Staff

Fred W. Morse and Fred W. Plapp have been appointed to the engineering staff of the Universal Concrete Pipe Co., 297 So. High St., Columbus, Ohio. Mr. Morse will be in the production, engineering and control department; Mr. Plapp, in the product design engineering division.

Compact 7-to-10-Watt Mobile Transmitter-Receiver

A new mobile radio dispatcher and receiver unit for the 152-162 megacycle band is announced by D. E. Noble, Vice-president in charge of the Communications and Electronics Division of Motorola, Inc., 4545 W. Augusta, Chicago 51, Ill. Designed for use in noisy urban areas up to about 15 miles wide, this new "Dispatcher" permits conversations free from interference from other radiotelephones or from lights, trolleys, and ignitions. Primary battery requirements will not be as rigid.

Only 17 inches long, 8½ inches wide, and 5¾ inches high, the unit weighs only 27 pounds. This reduction in size is achieved through the full use of miniature tubes, plus a single vibrator power supply for both the transmitter and receiver. Power output is from 7 to 10 watts, with a total transmitter drain of 20 amperes and a transmitter-receiver standby of 9.2 amperes.



Transmitter and receiver are separate units mounted on the drawer support, each with its own chassis socket, which makes for easy removal and service, interchange of units, or independent metering.

A single control cable runs to a small conveniently mounted control head which contains the volume and squelch control.

This new unit applies where extreme area coverage is not required. Effectiveness between headquarters and cars is, in general, 8 to 15 miles, depending on the height of the central station antenna, and 3 to 10 miles between car and car. With this equipment, alternate channel operation is made possible through the use of highly selective circuits and freedom from temperature drift.

APCO-V-APCO
PRIMERS
AUTOMATIC
POWER
OR
TANK PRIMERS
AIR RELEASE
VALVES
FOR
FILTER PIPE LINES
DISTRIBUTION LINES
AND OTHER USES
17 TYPES
VALVE AND PRIMER
CORPORATION
30 W. Washington St.
CHICAGO 2, ILL.

Freezing weather! Inadequate heating! These factors need not load up your meter shop with repair jobs. The frost bottom in American or Niagara water meters patented in 1921 and improved in 1938 prevents costly damage.

When ice forms in the meter and expansion takes place, the low cost bottom casting breaks, relieves pressure and allows all working parts including the gears to move with the ice. Damage is limited to the frost bottom. By replacing the bottom, on the spot, the meter is again ready for service.

The breaking point is carefully controlled and checked in advance by pressure tests at the factory.

The advantages of frost bottom meters are available to you at no extra cost.

Write for the full story on these meters that have become standard in many communities where temperatures drop below freezing.

AMERICAN
BRONZE CASE
NIAGARA
GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET • BUFFALO 14, NEW YORK
Simplicity

AUTOMATIC VOTING MACHINES
ELIMINATE
SPOILED AND DEFECTIVE BALLOTS

At each election, many paper ballots are invalidated because of:

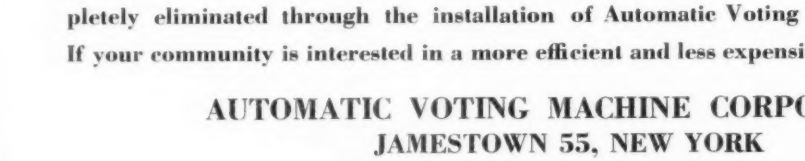
1—Voting for more than the proper number of candidates.
2—Distinguishing marks which can be construed as identifying the ballot.
3—Erasure to correct a mistake.
4—Use of a pen instead of a pencil.
5—Failure to keep cross mark (X) fully within the voting square.
6—Scratching the names of candidates for whom the voter does NOT wish to vote. (In some States, however, this is legal)

3,775 Cities and Towns from Coast-to-Coast have found that these errors may be completely eliminated through the installation of Automatic Voting Machines.
If your community is interested in a more efficient and less expensive voting system write—

AUTOMATIC VOTING MACHINE CORPORATION
JAMESTOWN 55, NEW YORK
"Builders of voting machines since 1898"

MARTIN **CARRYHAUL** TRAILERS
TRADE MARK REGISTERED

MARTIN CARRYHAUL TRAILERS
"Make Hauling A Pleasure!"
Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.
Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.



Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

MARTIN MACHINE COMPANY
KEWANEE, ILLINOIS

PROPER HOUSE NUMBERING

There is a right and a wrong way to plan your house numbering program. Premax Stamped and Embossed Metal Numbers provide the necessary legibility.

Premax Products
Div. Chisholm-Ryder Co., Inc., 4820 Highland Ave., Niagara Falls, N. Y.

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NEW CONSTRUCTION — REPAIRS

Prestressed Tanks	Steel Encasements
Reservoir Lining	Dam Repairs
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Disintegrated Concrete Structures Renewed
Repairs to all types of Masonry
Write for our new Manual

PRESSURE CONCRETE CO.
Engineers & Gunite Contractors

So. Court Street
Florence, Alabama

193 Emmet Street
Newark, New Jersey

XUM

New Parts and Service Manager for Hough

Charles R. Boreham has been appointed Parts and Service Manager for The Frank G. Hough Co., Libertyville, Ill., manufacturers of road building and material handling equipment.

Charles R. Boreham

For the past two years, Mr. Boreham has been working in assembly, production control, shipping, and receiving for Hough. He will now be in charge of part sales and will supervise the servicing of Hough Payloaders and loader and sweeper attachments for Industrial Tractors.

LeTourneau Staff Changes

Marking the completion of the first phase of its reconversion program, R. G. LeTourneau, Inc., Peoria, Ill., manufacturers of high-speed, rubber-tired excavating, hauling, and lifting equipment, announces several executive personnel changes.

Roy E. McCluskey

Roy E. McCluskey, assistant treasurer, has been advanced to the position of Vice-president in charge of sales. In his new position, he will direct the company's sales divisions and related departments.

Mr. McCluskey's appointment coincides with the resignation of Oscar W. Nelson as Vice-president and general manager of the Peoria division upon the completion of his assignment of reconversion and reorganization. Robert F. Nelson has resigned from his position of Vice-president and assistant to the President. He will remain a member of the Board of Directors.

L. A. Welch was appointed executive Vice-president, assisting in coordinating the functions of the division managers at LeTourneau factories in Longview, Texas, Toccoa, Ga., and Vicksburg, Miss.

L. A. Welch

During the war, Mr. Welch was Deputy Director of the WPB in Detroit. He is president of the Avery Farm Machinery Co., a director of the Commercial National Bank, and former president of the Hart Oil Co. in Peoria.

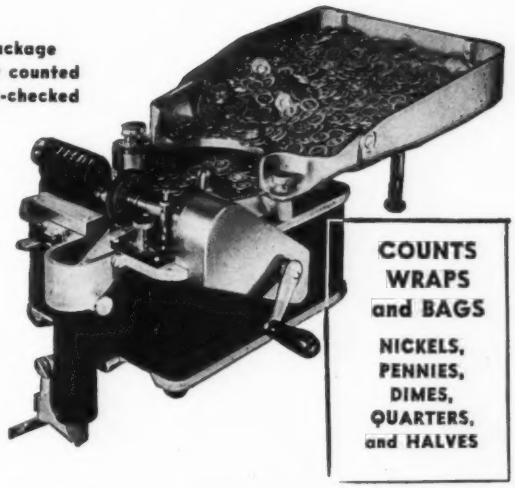
EVERY CITY

When counting PARKING METER money,
can save valuable hours
by using the portable, lightweight

DOWNEY-JOHNSON

COIN COUNTER

Every package accurately counted and double-checked



A Practical Investment
That Pays Dividends Daily

Make the counting of your parking meter collections easy with this *Downey-Johnson* Model 20 PH *Coin Counter* . . . It will count and wrap 175 rolls of coins per hour or bag 35,000 nickels per hour. This small machine saves time and labor—gains valuable hours for productive purposes—yet is priced within the reach of all. WRITE FOR CIRCULAR TODAY.

Universal Business Equipment Co.

537 So. Dearborn St. Chicago 5, Ill.

SALES ENGINEERS WANTED

Large manufacturer of process equipment wants to employ two recent college graduates, having some experience in chemical or sanitary engineering, for sales engineering work. One required for Chicago area and one for New York area.
Apply in writing, giving full details, to:

Box #272
THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.

XUM

Tractor-Mower for Airports

A tractor is used with a side mower and a seven-section pull mower at Hulman Field, Terre Haute, Ind., to cut the grass and weeds at the 640-acre airport. It travels at four miles an hour, and the entire area is covered in a few days. The tractor, a Model "A," is manufactured by the International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.; the mower, by Worthington Mower Co., Stroudsburg, Pa.

Sales Office on Wheels

Municipal officials throughout the United States may soon see the Ozalid Streamliner, which reproduces typed, drawn, printed, and photographic material in 30 seconds.

Demonstrating the new Ozalid reproducers inside the first of the Ozatrailers designed by Fruehauf Trailer Co.

A typewritten report or a file card is reproduced as an easy-to-read positive (not negative) copy direct from the original. No stencils are necessary. The work is simply drawn or typed on a translucent sheet of paper or card, and that's the "master," ready to turn out as many prints as are desired.

Assembly lines at Ozalid (Division of the General Aniline and Film Corp.), Johnson City, N. Y., are turning out these printmaking machines, which occupy less than 11 square feet of floor space.

A Shockless Closing Check Valve

There are twelve important advantages that the Grove Regulator Co., Oakland 8, Calif., lists as significant in its line of Chexflo check valves. The valves use a tough, flexible, synthetic rubber tube which operates against a streamlined core, thus allowing the valve to close tightly even if foreign matter such as scale, sand, or cuttings might become lodged in the shut-off area.

The advantages that Grove lists for this check valve, developed to handle water, oil, or air if needed, are as follows:

- high-flow capacity
- low differential operation
- positive bubble-tight shutoff
- non-sticking, non-pounding
- self-compensation for wear
- closes prior to back-flow
- shockless closing
- absorbs pressure impulses
- non-chattering
- smooth, sensitive response
- self-flushing seat
- resilient erosion resistance

Bulletin ⧧610A, issued by the company, gives detailed information on the Chexflo valve and how it works.

Voice Mailing and Filing

SoundScriber is a dictating machine that is entirely electronic. Instead of operating on the acoustical principle, with wax tubes, this machine records on discs of Vinylite, a product of Union Carbide and Carbon Corporation. Each disc takes 30 minute's dictation, and 100 occupy only an inch in a file drawer. A letter or report can be dictated with the inflections that often mean so much and can be mailed with a 3-cent stamp.

This transcribing SoundScriber is the secretary's playback machine.

The machine finds its best uses in office dictation, interviewing, correspondence, permanent recordings, and investigations. For example, the Safe and Loft Squad of the New York City Police uses this system of reporting.

The most recent exclusive convenience for SoundScriber users is the three-disc operation. This enables a busy executive to dictate on a 7-inch disc; to be interrupted by a telephone call and switch to a 5-inch disc to record the telephone conversation; to switch to the 3-inch disc for pertinent memoranda, a telegram, or instructions relative to the call; and, finally, resumes his 7-inch disc dictation by merely resetting the recording head on the proper light-beam index number. SoundScriber is the only dictation machine capable of three-disc dictation. It is manufactured by the SoundScriber Corp., New Haven 11, Conn.

Sirrine Wins Award

For the sixth consecutive time, J. E. Sirrine & Co., Greenville, S. C., has received an advertising award, this year a special award of merit for its advertising campaign during 1946 and 1947 from the National Advertising Agency Network competition.

Created and placed through the Roland C. E. Ullman Organization of Philadelphia, Pa., the engineering design firm's advertisements in general magazines were the basis for the award.

STEEL TANK

for Sale

One standard ellipsoidal-bottom steel tank for sale. Net capacity, 50,000 gallons. On steel tower, on elevation 150 feet above grade.

Tank in good condition. Made and erected by Chicago Bridge and Iron Company.

On our premises.

Write or wire

Empire
Storage & Ice Co.
2722 Guinotte Ave.
Kansas City 1, Mo.

The American City Professional Service Directory

ABRAMS AERIAL SURVEY CORPORATION, Lansing, Michigan

One-quarter Century of Experience

Planimetric and topographic maps, controlled mosaics, Stereograms, relief models, large-scale atlas sheets. The complete job—photography—compilation—to finished survey. Oblique photographs for pictorial views—for project presentation.

AERIAL SURVEYS — OBLIQUE PHOTOGRAPHY

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Specialists in valuation and reassessment of Residential, Commercial & Industrial property

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Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, and Reports.

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Consulting Engineers — 50th Year

Waterworks, Light and Power, Sewerage, Reports, Designs, Appraisals, Rate Investigations.

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Kansas City 2, Missouri

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Consulting Management Engineers

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Personnel Classification — Job Evaluation
Salary Administration — Organization Planning
Budgetary Control — Office Systems

THE J. M. CLEMINSHAW COMPANY

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Specializing in the revaluation of municipalities for local tax purposes. Illustrated brochure and moving picture film upon request

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A rational method of construction for shallow, heavily loaded and wide-span structures

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not already represented in this directory can secure rates for these cards and further particulars of our service by writing to—

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Index to Advertisers

Abrams Aerial Survey Corp. 181
Adams Manufacturing Co., J. D. ... 12
Allen-Howe Electronics Corp. 162
Allis-Chalmers Tractor Div. 29
American Gas Accumulator Co. ... 158
American-La France-Foamite Corp. 65
American Steel & Wire Co. 173
American Tel. & Tel. Co. 4
American Well Works, The 35
Architects, Landscape 181-185
Armco Drainage & Metal Products, Inc. 155
Armstrong Associates 181
Aurora Pump Co. 48
Automatic Voting Machine Corp... 178

Baker Manufacturing Co. 154
Barber-Greene Co. 66, 67
Black & Veatch 181
Bridgeport Brass Co. 32
Brown-Bevis Equipment Co..... 162
Buck, Seifert & Jost 181
Buffalo Meter Co. 177
Burns & McDonnell Eng. Co. 181
Business Research Corporation 181
Byron Jackson Company 6

Cast Iron Pipe Research Assn. 58
Caterpillar Tractor Co. 31
Cement Gun Co. 165
Central Foundry Company 55
Centriline Corporation 22
Chapman Valve Mfg. Co. 39
Chicago Bridge and Iron Co. 8
Cleminshaw Co., J. M. 181
Coff, L. 181
Cole-Layer-Trumble Co. 182
Cole Mfg. Co., R. D. 48
Consulting Engineers 181-185
Crouse-Hinds Co. 138
Cyclone Fence Division 173

Damon & Foster 182
De Leuw, Cather & Co. 182
Dempster Brothers. Inc. 152
Disston & Sons, Inc., Henry 118
Dual Parking Meter Co. 146
Duncan Meter Corp. 140

Electric Tamper & Equipment Co. .. 171
Electrical Testing Laboratories, Inc. 181
Embury Mfg. Company 175
Emerson Company, J. H. 172
Enterprise Engine & Foundry Co. .. 81
Etnyre & Company, E. D. 30
Expanding Sewer Mach. Co. 36

Fairbanks, Morse & Co. 156, 169
Fairchild Aerial Surveys, Inc. 174
Fisher Research Laboratory, Inc. .. 36
Fitzhenry-Guptill Company 159
Flexible Underground Pipe-Cleaning Co. 167
Flink Company 166
Flood & Co., Walter H. 182
Ford, Bacon & Davis, Inc. 183
Ford Meter Box Co. 171
Four Wheel Drive Auto Co. 69

Gamewell Co., The..... 16
Gannett, Fleming, Corddry & Carpenter, Inc. 183
Gar Wood Industries, Inc. 160
General Chemical Company 187
General Detroit Corp. 14
General Electric Co. 124, 132
Gilliam & Assoc., C. T. 169
Globe Phone Mfg. Corp. 159
GMC Truck & Coach Division, General Motors Corp. 168
Goldak Company 163
Golden-Anderson Valve Spec. Co... 169
Gorman-Rupp Co. 38
Greenlee Tool Company 28
Griffenhagen & Associates 183
Gunite Concrete & Const. Co. 48

Haiss Mfg. Co., Inc., George 150
Hand Laboratory 44
Harley-Davidson Motor Co. 68
Heil Co. 26
Hersey Manufacturing Co. 75
Holmes & Narver 183
Homelite Corporation 164
Horan Co., The George B. 183
Hough Co., The Frank G. 33

Infilco, Inc. 48
International City Managers' Assn. 34
International Harvester Co. 60, 148
International Meters, Inc. 144
International Salt Co., Inc. 49

Jaeger Machine Co. 30
Johns-Manville 40, 41
Johnston & Jennings Co., The 159

Karpark Corp. 158
Kelley-Creswell Company 175

Laboratories, Testing 181-185
Layne & Bowler, Inc. 116
Leadite Co. 166
Lewis Manufacturing Company ... 155
Line Material Company 131
Littleford Bros., Inc. 71
Little Giant Products, Inc. 24
Lochner & Company, H. W. 183
Lock Joint Pipe Company 18
Ludlow Valve Manufacturing Co., Inc. 62

M&H Valve and Fittings Co. 48
Mack Manufacturing Corp. 73
Magee-Hale Park-O-Meter Co. 136
Martin Machine Co. 178
Mathieson Alkali Works, Inc. 63
McDonald Mfg. Co., A. Y. 175
McGraw & Co., F. H. 184
Meili-Blumberg Corp. 161
Metcalf & Eddy 184
Miro-Flex Co. 166
Modern Manufacturing Co. 165
Morris Machine Works 54
Motorola, Inc. 61
Mueller Co. 161
Murdock Mfg. & Supply Co., ... 172

National Supply Co., The 64
Neptune Meter Co. 82
Nutting Company, H. C. 184

Ohio Brass Company 128
Oliver Corporation 120
Ozone Processes Div. 185

Parsons Company 42
Parson, Brinckerhoff, Hogan & MacDonald 184
Peerless Pump Division 153
Permutit Co. 46
Philadelphia Electrical & Mfg. Co... 45
Pitometer Co. 185
Pittsburgh Corning Corp. 37, 47
Pittsburgh-Des Moines Steel Co. ... 50
Pittsburgh Pipe Cleaner Company. 80
Pittsburgh Testing Laboratory 184
Pollard Co., Inc., Joseph G. 36
Portland Cement Association 78
Porto-Pump, Inc. 162
Premax Products Division 178
Pressure Concrete Co. 178
Prismo Safety Corp. 134

Quinn Wire & Iron Works 50

Ranney Method Water Supplies, Inc. 157
Reeves Brothers, Inc. 176
Refinite Corp., The 50
Reflecto Letters, Inc. 50
Regester, Robert T. 185
Remington Rand, Inc. 76
Rhodes, Inc., M. H. 142
Robert & Co. 185
Rusta Restor Division 159
Ryerson & Son, Inc., Joseph T. 10

Sanitary Engineers 181-185
Schoonmaker Co., Inc., A. G. 72
Seelye, Stevenson & Value..... 185
Simplex Valve & Meter Co. 70
Skinner Co., M. B. 50
Solvay Sales Corp. 30
Statler Hotels 44
Stellwagen, Robert H. 185
Stewart Iron Works Co., Inc. 166
Street and Traffic Safety Lighting Bureau 130
Superior Engines Division 64

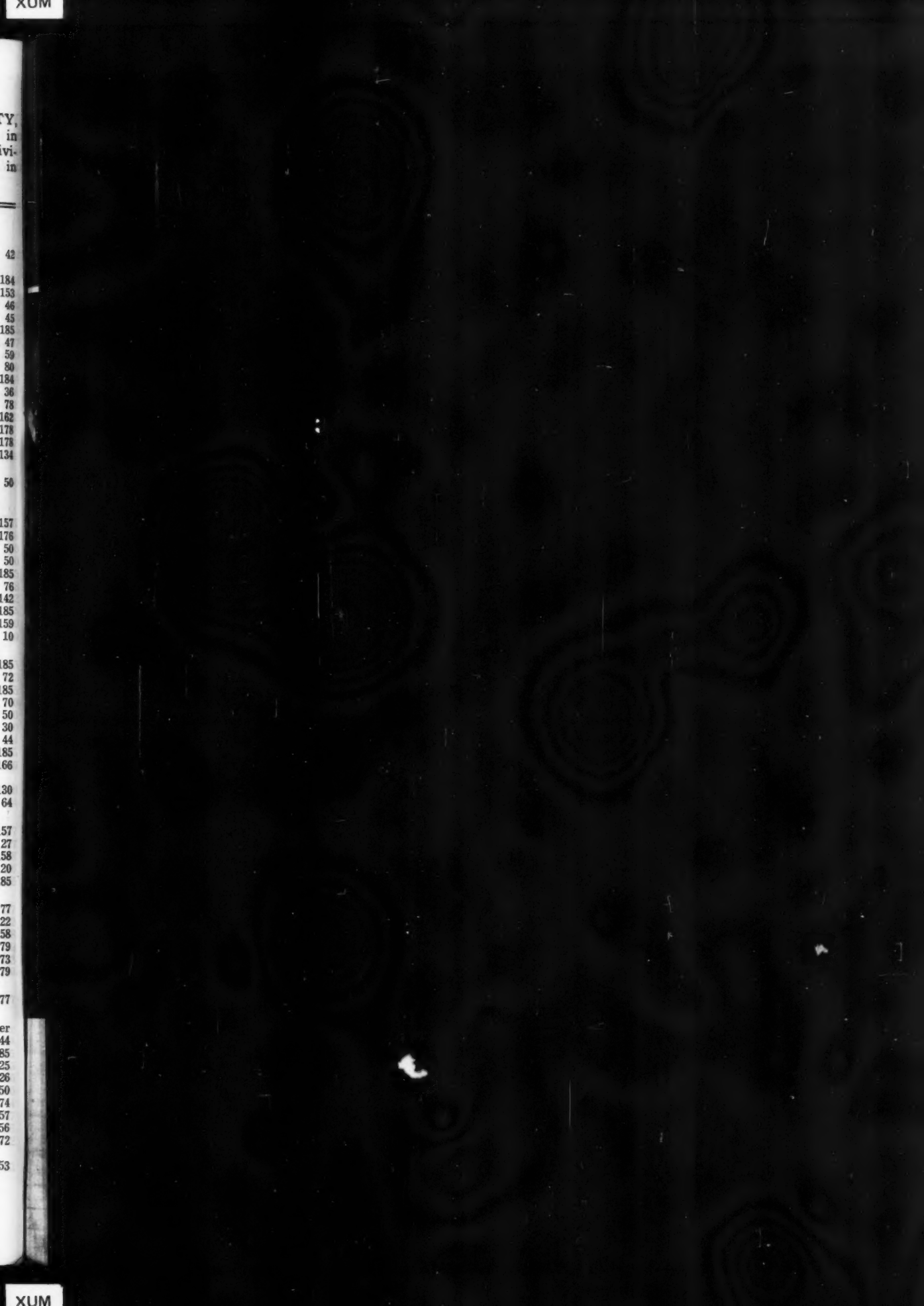
Tarrant Manufacturing Co. 157
Tate Pipe Linings, Inc. 27
Test Plug Mfg. Co. 158
Texas Co. 2, 20
Toledo Testing Laboratory 185

Underwood Corporation 77
Union Metal Manufacturing Co. 122
U. S. Bronze Sign Co., Inc. 158
U. S. Pipe & Foundry Co. 79
U. S. Steel Subsidiary 173
Universal Business Equipment Co. 179

Valve & Primer Corp. 177

Wallace & Tiernan Co. .... Back Cover
Warren Foundry & Pipe Corp. 44
Welsbach Corp. 185
Western Railroad Supply Co. 25
Westinghouse Electric Corp. 126
White Mfg. Co. 50
Wickwire Spencer Steel Div. 74
Wintroath Pumps, Inc. 57
Wood Co., R. D. 56
Worthington-Gamon Meter Co. 172
Worthington Pump & Machinery Corp. 42, 43, 51, 52, 53

Professional Service Directory—181, 182, 183, 184, 185



NOVEMBER 1947

The American City

Left to right: Stanley Woodward, State Department Chief of Protocol; Brigadier General Wallace Graham, personal physician to the President, formerly with the 82nd Airborne Division; Eelco van Kleffens, Netherlands Ambassador to the United States; President Truman; Mayor Charles M. J. H. Hustinx of Nijmegen, Holland; Mayor George W. Welsh of Grand Rapids, President, U. S. Conference of Mayors; and Paul V. Betters, Executive Director of the Mayors' Conference.

How mayors and local food committees can help in filling Europe's desperate need for American wheat was a discussion topic when this photograph was snapped at the White House October 21. Mayor Hustinx came to America to thank the city of Albany, N. Y., for "adopting" Nijmegen and sending it 200 tons of relief supplies and clothing. He also thanked President Truman, on behalf of his people, for his city's liberation by the 82nd Airborne Division in 1944 and appealed for increased aid to the other countries of Europe.

(See also "Municipalities Organize Food Conservation Programs," page 5 of this issue.)